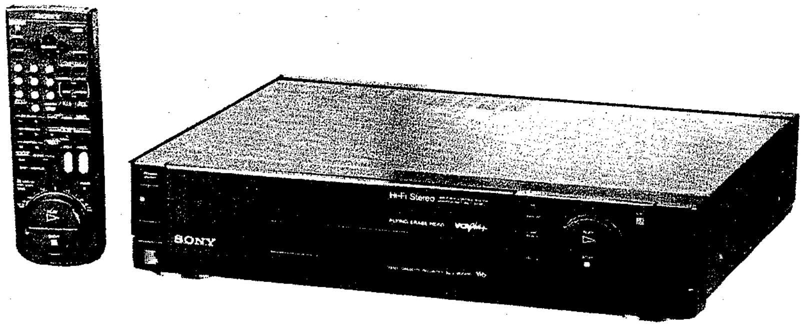
SLV-750HF/751HF/900HF
RMT-V129/V130

SERVICE MANUAL

US Model
Canadian Model
SLV-750HF/751HF/900HF
Chile Model
Mexican Model
PX Model
SLV-900HF



- **Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENT II for MECANICAL ADJUSTMENS. (9-972-816-11)**

VHS Hi-Fi

SPECIFICATIONS

System

Format	VHS NTSC standard
Video Recording System	Rotary two-head helical scanning FM system
Video Signal	NTSC color, EIA standards
Tape Speed	SP: 33.35 mm/s (1 3/8 inches/s) EP: 11.11 mm/s (7/16 inches/s) LP: 16.67 mm/s (11/16 inches/s) Playback only
Maximum recording/ playback time	9 hrs. in EP mode (with T-180 tape)
Fast-forward and rewind time	Approx. 4 min. 30 sec (with T-120 tape)
High-speed rewind time	Approx. 3 min. (with T-120 tape)

Tuner Section

Channel Coverage	VHF channels 2 to 13 UHF channels 14 to 69 CATV channel A-8 to A-1, A to W, W+1 to W+84
Antenna	75-ohm antenna terminal for VHF/UHF

Inputs and Outputs

LINE IN 1 and 2	VIDEO IN (phono jack) (1 each) Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative AUDIO IN (phono jack) (2 each) Input level: –7.5 dBs (0 dBs = 0.775 Vrms) Input impedance: more than 47 kilohms
LINE OUT	VIDEO OUT (phono jack) (1) Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative AUDIO OUT (phono jack) (2) Standard output: –7.5 dBs at load impedance 47 kilohms Output impedance: less than 10 kilohms
CONTROL S IN	Mini jack (1)

Timer Section

Clock	Quartz locked
Time Indication	12-hour cycle
Timer Setting	Only for recording 8 program in one month at max.
Power back-up	Built-in self-charging capacitor Back-up duration: Up to three hours at one time

– Continued on next page –

VIDEO CASSETTE RECORDER

SONY®

MICROFILM

General

Power requirements	120V AC, 60Hz (750HF/751HF/900HF : US, CND, MX) 110-240V AC, 50/60Hz (900HF : CHL, PX)
Power consumption	25 W (max.)
Operating temperature	5°C to 40°C (41°F to 104°F)
Storage temperature	–20°C to 60°C (–4°F to 140°F)
Dimensions	430 x 90 x 372 mm (w/h/d) (17 x 3 5/8 x 14 3/4 inches)
Weight	5.2 kg (11 lb 7oz.)

Remote Commander

Remote control system	Infrared control
Power requirements	3 V DC, 2 size AA batteries (IEC designation R6)

Accessories Supplied

Remote Commander	(1)
Size AA (R6) batteries	(2)
75-ohm coaxial cable with F-type connectors	(1)
External antenna connector	(1)
AC power cord	(1)
Audio/video connecting cable (3 phono to 3 phono)	(1)
Cable Mouse (Cable Box Controller)	(1)

Design and specifications are subject to change without notice.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

501

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SERVICE NOTE

1. RETURNING PINCH ROLLER, GUIDE ROLLER AND ELEVATOR CAM TO STOP CONDITION

1) Remove the bottom panel.
2) Turn the worm gear Ⓐ of the cam motor, located at lower of the MD, to the arrow direction Ⓑ by finger.

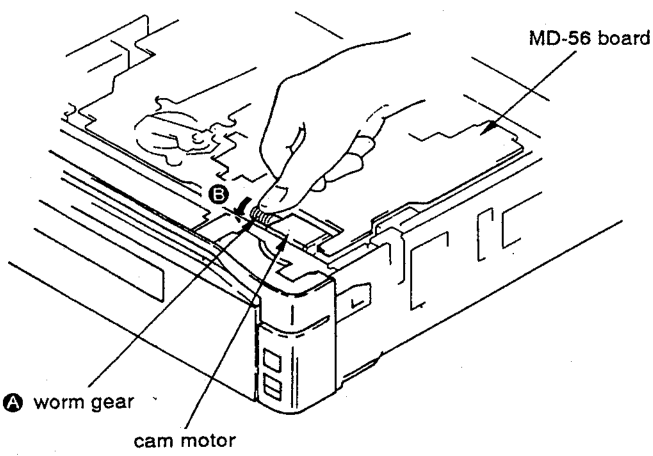

MD-56 board
Ⓑ
Ⓐ worm gear
cam motor

Fig.1.

2. WINDING TAPE TO CASSETTE HALF

Turn the fly wheel Ⓐ of the capstan motor to the arrow direction Ⓑ by finger, then the cassette tape will be wound to the cassette half.

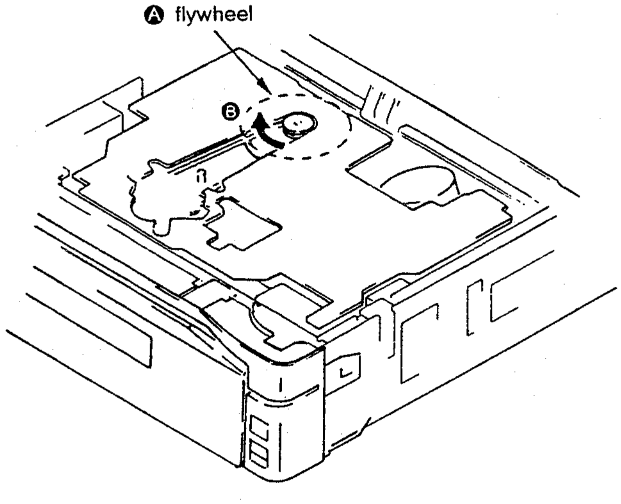


Fig. 2.

3. TAKING OUT CASSETTE WHEN UNIT IS DEFECTIVE WITH CASSETTE IN

1) Remove the upper case.
2) Turn the worm gear Ⓐ of the FL cassette compartment motor to the arrow direction Ⓑ by finger.

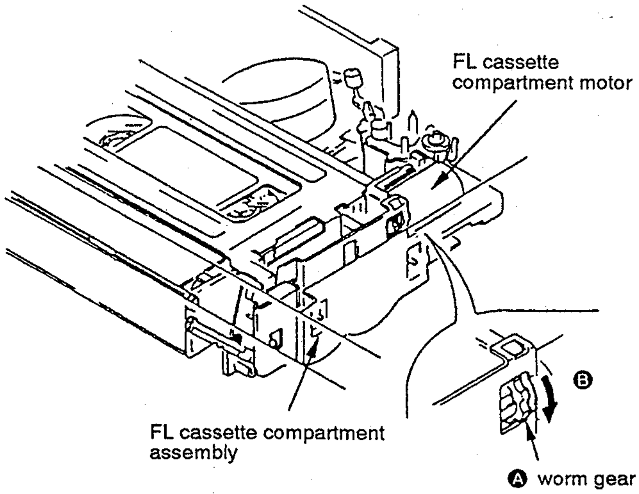

FL cassette compartment motor
FL cassette compartment assembly
Ⓑ
Ⓐ worm gear

Fig.3.

Note: When performing 1. to 3., be careful not to clog and damage the cassette tape.

4. UPPER DRUM REPLACEMENT

4-1. Removal of Upper Drum

1) Remove the screw ❶ (+P3 × 6) and take out the grounding shaft ❷. (See Fig.4.)
2) Completely remove the rotary upper drum board and desolder the soldering indicated by the arrows (12 points).
3) Remove two screws ❸ (PSW3×8) and take out the rotary upper drum in the arrow direction Ⓐ. (See Fig. 5.)
   If it is difficult, remove by shaking the rotary upper drum gradually.

Note: If the drum can not be removed, check whether the solders have been removed or not again.

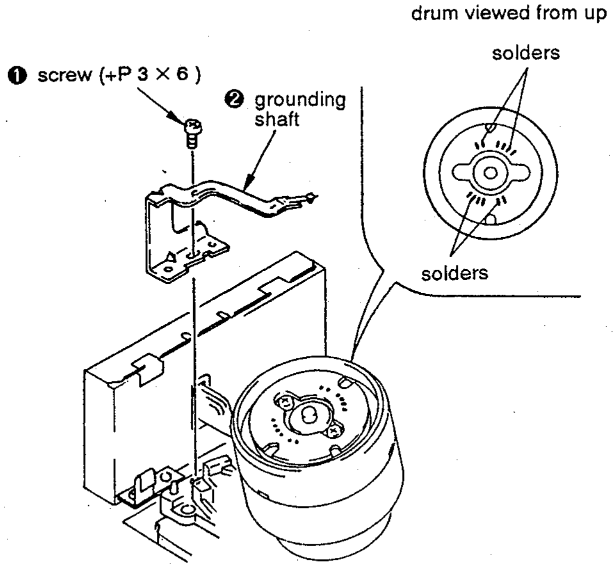

drum viewed from up
solders
❶ screw (+P 3 × 6)
❷ grounding shaft
solders

Fig. 4.

4-2. Mounting Upper Drum

1) When inserting the rotary drum into the lower drum, be careful not to blur the contacting surface with fingerprint or the like.
2) Mount the rotaly upper drum board by aligning marked ➡ with marked ⇒ of rotary transformer board (lower drum) so that the screw holes of both upper and lower drums match. (See Fig.5.)
3) If it is difficult, mount the upper drum by shaking it gradually.
   Note: Be careful not to damage the head. Make sure that the upper drum is tightly inserted.
4) Tighten two screws ❸ (PSW3×8). (See Fig. 5.)
   Note: Temporary tighten two screws. After making sure that upper drum is tightly inserted, tighten the screws.
5) Solder 12 points on the board of the rotary upper drum.
6) Fix the grounding shaft ❷ using the screw ❶ (+P3 × 6) so thet the protrusion of grounding shaft end contacts the center of the drum shaft.
   Note: When attaching the grounding shaft ❷, be careful not to apply force to the spring section of it.

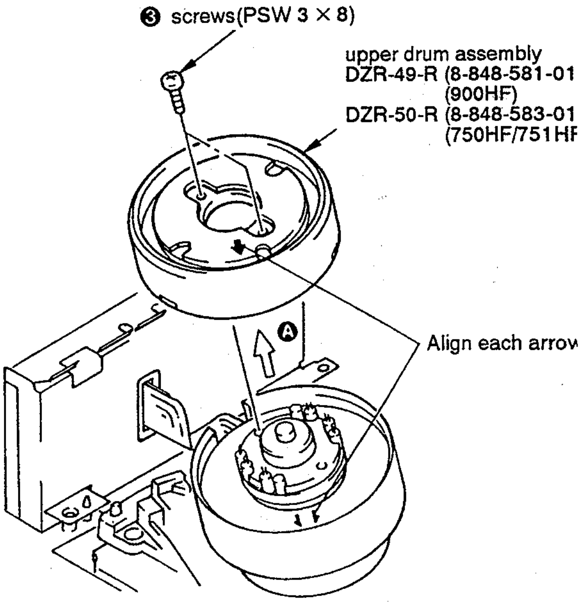

❸ screws(PSW 3 × 8)
upper drum assembly
DZR-49-R (8-848-581-01
(900HF)
DZR-50-R (8-848-583-01
(750HF/751HF
Ⓐ
Align each arrow

Fig. 5.

SECTION 1
GENERAL

This section is extracted from SLV-900HF instruction manual.

Precautions

Safety

- Operate the unit only on 120 V AC, 60 Hz.
- If anything falls into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- One blade of the plug is wider than the other for the purposes of safety and will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, contact your dealer.
- Unplug the unit from the wall outlet if you do not intend to use it for an extended period of time. To disconnect the cord, pull it out by the plug, never by the cord.

Installation

- Allow adequate air circulation to prevent internal heat buildup.
- Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation slots.
- Do not install the unit near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- Do not install the unit in an inclined position. It is designed to be operated in a horizontal position only.
- Keep the unit and cassettes away from equipment with strong magnets, such as microwave ovens or large loudspeakers.
- Do not place heavy objects on the unit.

Operation

- When the unit is not in use, turn the power off to conserve energy and to extend its life.
- Remove and store video cassettes after recording or playback.

Cleaning

- Clean the cabinet, panel and controls with a dry, soft cloth, or a soft cloth slightly moistened with a mild detergent solution.
- Do not use any type of solvent, such as alcohol or benzine.

Introduction

How to Use This Manual

This manual is divided into five chapters.
The chapters and their contents are as follows:

Preliminaries	**(page 2)**
Preparation	**(page 6)**
Basic Operations	**(page 29)**
Advanced Operations	**(page 48)**
Additional Information	**(page 60)**

If you are using your VCR for the first time, start from the section **"Hookups and Getting Started"** (page 6). This section explains how to hookup, set up, and operate your VCR so that you can start enjoying it right away.

For information about the VCR's basic operations, such as Playback (page 29), Recording TV Programs (page 34), or Timer Recording (page 37), see **Basic Operations.**

If you are already familiar with the basic operations, see **Advanced Operations.**

If you have any problems in operating the VCR, refer to **Troubleshooting.** If your VCR is in need of repair, contact your nearest Sony Service Center facility.

Conventions of this manual

This manual explains operations using the VCR Remote Commander. However, the buttons on the VCR with the same name or mark as those on the Remote Commander function exactly the same as those on the Remote Commander.

When you are reading through the manual, remember:

- Buttons and switches are shown in uppercase letters. Example: Press ► PLAY.
- Numbers in the illustrations correspond to numbers in the text.
- ⟵ indicates signal flow.
- Notes and cautions are enclosed in boxes.

Unpacking

Check that you have received the following accessories:

- Remote Commander (1)
- Size AA (R6) batteries (2)
- External antenna connector (1)
- 75-ohm coaxial cable with F-type connectors (1)
- AC power cord (1)
- Audio/video connecting cable (3 phono to 3 phono) (1)
- Cable Mouse (Cable Box Controller) (1)

Overview

Editing

- **Flying erase head**
  Allows clean, concise editing with less noise.
- **Input connectors on the front panel**
  Allows easy connection to a video camera recorder.
- **Insert Editing**
  Allows easy superimposition of pictures and/or sound onto a prerecorded cassette.
- **CONTROL S INPUT jack**
  Allows remote control of this VCR by other Sony video equipment with a CONTROL S OUTPUT jack.

Functions

- **VCR Plus+™ system**
  Allows you to quickly and easily preset up to eight TV programs.
- **Cable box control**
  Allows your VCR to control channel selection on most cable boxes.
- **APC (Adaptive Picture Control) function**
  Automatically optimizes recording and playback performance by adjusting the video circuitry for each tape that you use.
- **Auto tracking function**
  Automatically adjusts the tracking condition for optimum picture quality.
- **Timer recordings of eight programs in a month**
  Recording of up to eight TV programs can be preset up to one month in advance.
- **DUAL MODE SHUTTLE ring**
  Allows quick access to the desired scene and playback in various speeds in forward and reverse directions.
- **Index function**
  The beginning of a desired scene can be located easily with the index search function.
- **Multi-brand TV control Remote Commander**
  The Remote Commander can control SONY and other manufacturers' TV sets.
- **Auto head cleaner**
  Cleans the video heads each time a cassette is inserted or ejected.

On-screen display

- **ON SCREEN HELP message**
  The VCR gives a message on screen with a beep tone to warn that you have attempted an incorrect operation.
- **DISPLAY**
  Tape counter, cassette speed, operation mode, and remaining cassette length can be displayed on the TV screen.
- **TIMER SET/CHECK display**
  Timer recording settings can be set and checked by referring to the TV screen.
- **LANGUAGE (Canadian versions only)**
  You can preset your VCR to display screen information in either English or French.

High-quality picture

- **High-quality picture**
  Your Sony VCR provides sharp, finely detailed pictures through High Quality (HQ) picture technology. Your VCR incorporates VHS high-quality picture technology and is compatible with any VCR bearing the VHS mark.

VCR Plus+ and PlusCode are trademarks of Gemstar Development Corp.

Hookups and Getting Started

Before you can use your VCR for the first time, you need to connect it to your TV and set it up to receive programs for viewing and recording. This section explains how to hook up, set up, and operate your VCR so that you can start enjoying it right away. There are, however, many types of TVs available and many different ways in which your TV can be hooked up. As a result, this manual describes several ways your VCR can be connected.

To hook up your VCR so that it works best for you, first scan through the table below. Then use the accompanying diagrams and procedures on the following pages to complete your VCR's connections.

If you ...	Use	Refer to ...
Have Audio/Video Inputs on your TV.	Hookup 1 first, then proceed.	Page 7
Have a cable box.	Hookup 2. TV signal → Cable Box → VCR	Page 8
Have cable, but don't have a cable box.	Hookup 3. TV signal → VCR	Page 10
Have a cable box that cannot be controlled by the VCR's cable box control feature.	Hookup 3 or 4, (or contact your cable company. They may be able to supply a compatible cable box.) TV signal → Cable Box → VCR	Page 11 or 12
Have an antenna, not cable TV.	Hookup 5. TV signal → VCR	Page 14

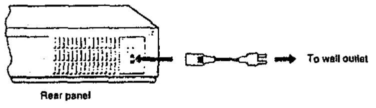
After you've completed the connections, follow the instructions for setup, including VCR Plus+ setup. (During setup, if you need more details of the procedures described, page numbers are provided where you can find complete, step-by-step instructions.)

After you've completed the setup, you're ready to use your VCR. Follow the instructions provided in "To Watch the TV," "To Watch the VCR," and "To Record A Program" for your specific hookup.
(Again, if you need step-by-step instructions, page numbers are provided where you can find this information.)

Caution
Connections between the VCR VHF/UHF OUT connector and the antenna terminals of a TV receiver should be made only as shown in the instructions. Failure to do so may result in operation that violates the regulations of the Federal Communications Commission regarding the use and operation of RF devices. Never connect the output of the recorder to an antenna or make simultaneous (parallel) antenna and recorder connections at the antenna terminals of your receiver.

Before making the connections, check the following points:

- Turn off the power to the VCR and TV.
- Do not connect the AC power cords until all of the connections are completed.



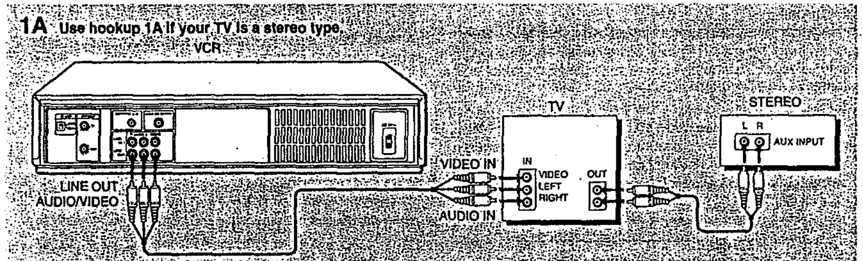
- Make connections firmly. Loose connections may cause picture distortion.
- If your TV doesn't match any of the examples provided, consult your nearest Sony dealer or qualified technician.

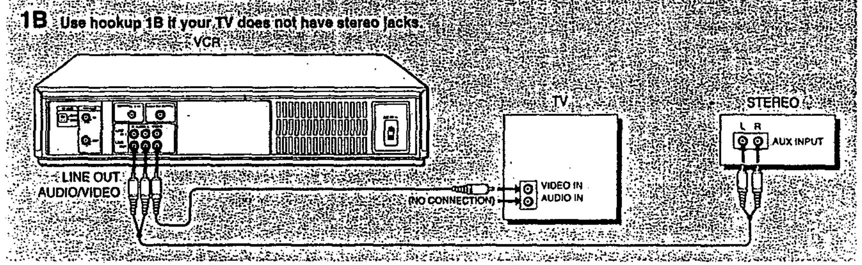
Hookup 1

Audio/Video (A/V) Hookup

If your TV has audio/video (A/V) input jacks, you will get better picture and sound if you hook up your VCR using these connections. In addition, for a true "home theater" experience, you should connect the audio outputs of your VCR or TV to your stereo system.
If your TV doesn't have A/V inputs, see the following pages for antenna or cable hookup.

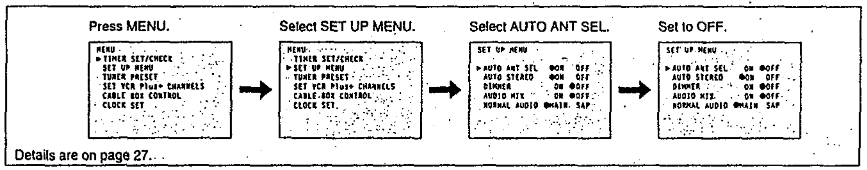
If you intend to use the VCR for playback only, you're finished after you've made these connections. If you want to record off-air or off your cable TV system, please do the A/V hookup on this page first, then proceed to the following pages for antenna or cable hookup.


1A Use hookup 1A if your TV is a stereo type.


1B Use hookup 1B if your TV does not have stereo jacks.

After you've hooked up your TV using the A/V connections, use the following procedure to set up and use the VCR with your TV.

A/V Setup & Operation
Set AUTO ANT SEL to OFF.


Press MENU.

```
MENU
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

Select SET UP MENU.

```
MENU
 TIMER SET/CHECK
▶SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

Select AUTO ANT SEL.

```
SET UP MENU

▶AUTO ANT SEL   ●ON   OFF
 AUTO STEREO    ●ON   OFF
 DIMMER          ON  ●OFF
 AUDIO MIX       ON  ●OFF
 NORMAL AUDIO  ●MAIN  SAP
```

Set to OFF.

```
SET UP MENU

▶AUTO ANT SEL    ON  ●OFF
 AUTO STEREO    ●ON   OFF
 DIMMER          ON  ●OFF
 AUDIO MIX       ON  ●OFF
 NORMAL AUDIO  ●MAIN  SAP
```

Details are on page 27.

Hookup 2 - Using VCR Cable Box Control

Cable Hookup

Recommended Use:
This hookup is recommended for most cable systems. It allows the VCR's cable box control feature to control the channel on the cable box, simplifying the recording process. You should use this hookup if you have a cable box, especially if your cable company "scrambles" all, or most, channels.

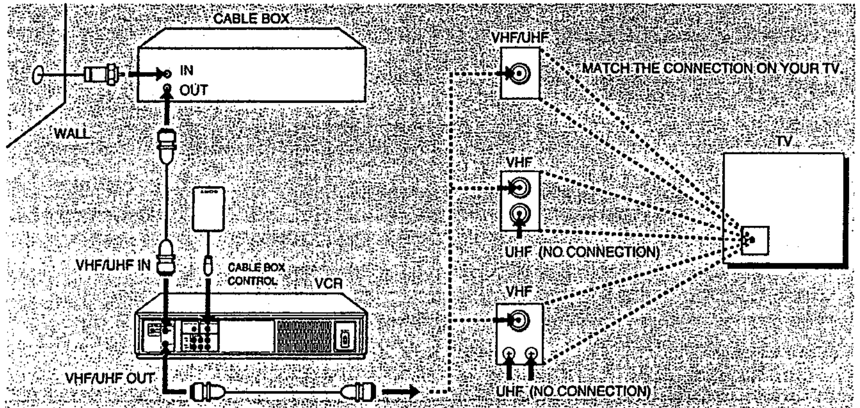
Background
This VCR can record most unscrambled cable channels. Some cable systems "scramble" specific channels, usually premium, or pay-per-view channels. In order to record these "scrambled" channels you should use this hookup.

This hookup simplifies recording channels from the cable box, by using the VCR's cable box control feature to change channels on the cable box. The cable box control feature allows the VCR to change channels on most cable boxes that are capable of IR remote control.

A list of compatible cable boxes is on page 26. If, after checking your setup, you are sure that the VCR will not control your cable box, contact your cable company. They may be able to supply a compatible cable box.

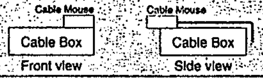
If your cable company cannot supply a compatible cable box, and your cable system only "scrambles" a few channels, use Hookup 3.

If your cable company cannot supply a compatible cable box, and your cable system only "scrambles" all, or most, channels, you must use Hookup 4.


CABLE BOX
IN
OUT
WALL
VHF/UHF IN
CABLE BOX CONTROL
VCR
VHF/UHF OUT
VHF/UHF
MATCH THE CONNECTION ON YOUR TV.
TV
VHF
UHF (NO CONNECTION)
VHF
UHF (NO CONNECTION)

Cable Mouse Hookup

Position the CABLE MOUSE on the cable box as shown below. Make sure that the front of the CABLE MOUSE projects out in front of the cable box.
Remove the protective film from the double-sided tape to stick the CABLE MOUSE to the cable box.


Cable Mouse
Cable Box
Cable Mouse
Cable Box

Front view
Side view

For best results, position the cable box away from the VCR.

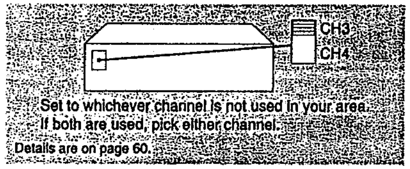
What You Can and Can't Do With This Hookup

What You Can Do
- Record any channel by selecting the channel on the cable box from your VCR.

What You Can't Do
- Record with the cable box turned off.
- Record one channel while watching another channel.

VCR Setup

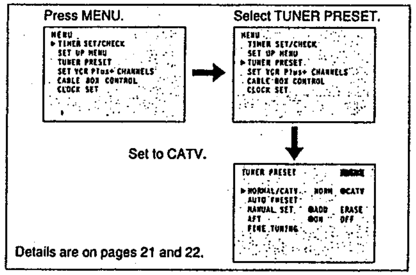
1 Set the RF UNIT on the VCR's rear panel to CH 3 or CH 4.
If you made A/V connections, skip this step.



Set to whichever channel is not used in your area.
If both are used, pick either channel.
Details are on page 60.

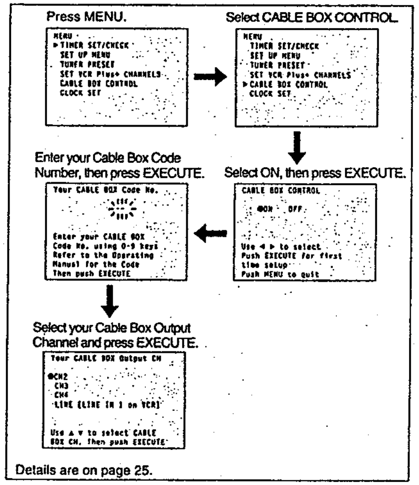
2 Switch on your cable box.

3 Set NORMAL/CATV to CATV.


MENU
▶ TIMER SET/CHECK
SET UP MENU
TUNER PRESET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
MENU
TIMER SET/CHECK
SET UP MENU
▶ TUNER PRESET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
TUNER PRESET
▶ NORMAL/CATV NORM ●CATV
AUTO PRESET
MANUAL SET ●ADD ERASE
AFT ●ON OFF
FINE TUNING

Press MENU.
Select TUNER PRESET.
Set to CATV.
Details are on pages 21 and 22.

4 Set the CABLE BOX CONTROL to ON.

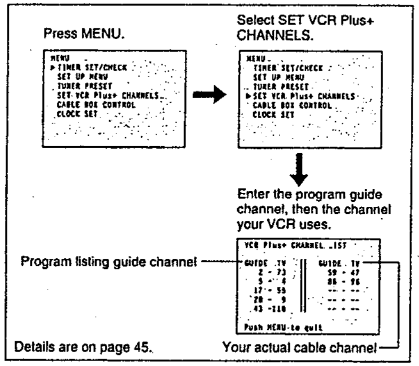

MENU
▶ TIMER SET/CHECK
SET UP MENU
TUNER PRESET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
MENU
TIMER SET/CHECK
SET UP MENU
TUNER PRESET
SET VCR Plus+ CHANNELS
▶ CABLE BOX CONTROL
CLOCK SET
CABLE BOX CONTROL
●ON OFF
Use ◀ ▶ to select
Push EXECUTE for first time setup
Push MENU to quit
Your CABLE BOX Code No.
Enter your CABLE BOX Code No. using 0-9 keys
Refer to the Operating Manual for the Code
Then push EXECUTE
Your CABLE BOX Output CH
●CH2
CH3
CH4
LINE (LINE IN 1 on VCR)
Use ▲ ▼ to select CABLE BOX CH, then push EXECUTE

Press MENU.
Select CABLE BOX CONTROL.
Select ON, then press EXECUTE.
Enter your Cable Box Code Number, then press EXECUTE.
Select your Cable Box Output Channel and press EXECUTE.
Details are on page 25.

VCR Plus+ Channel Setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details, see page 44.

2 If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows:


MENU
▶ TIMER SET/CHECK
SET UP MENU
TUNER PRESET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
MENU
TIMER SET/CHECK
SET UP MENU
TUNER PRESET
▶ SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
VCR Plus+ CHANNEL LIST
GUIDE TV
2 - 73
5 - 4
17 - 55
28 - 9
43 - 110
GUIDE TV
59 - 47
86 - 96
Push MENU to quit
Program listing guide channel
Your actual cable channel

Press MENU.
Select SET VCR Plus+ CHANNELS.
Enter the program guide channel, then the channel your VCR uses.
Details are on page 45.

To Watch the TV
1 Turn your VCR off, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.
2 Switch on your cable box.
3 Tune the TV to the cable box output channel (usually 2, 3, or 4).
4 Select the channel that you want to watch with your cable box.

To Watch the VCR
1 Tune the TV to CH 3 or CH 4, (or to A/V input if you made A/V connections.)
2 Insert a cassette and press ▶ PLAY.
Details are on page 30.

To Record A Program
1 Switch on the cable box.
2 Press VCR Plus+ on the Remote Commander.
3 Enter the program's PlusCode number.
4 Press ONCE, DAILY, or WEEKLY on the Remote Commander.
5 Insert a blank cassette.
6 Press TIMER REC on the Remote Commander.
7 Leave the cable box on.
Details are on page 46.

Hookup 3 - No Cable Box or Incompatible Cable Box, Few “Scrambled” Channels

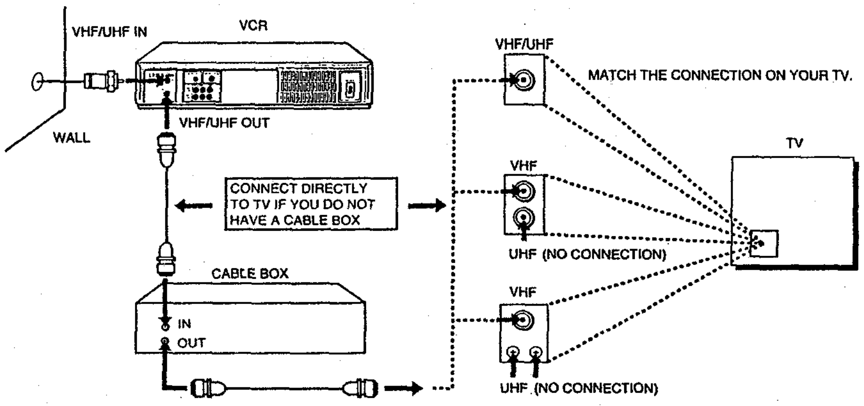
Cable Hookup

Recommended Use:
Use this hookup if you do not have a cable box.

Also use this hookup if your cable company cannot supply a cable box that is compatible with the VCR's cable box control feature, and your cable system only “scrambles” a few channels.

Background
This VCR can record most unscrambled cable channels. Some cable systems “scramble” specific channels, usually premium or pay-per-view channels. You will not be able to record “scrambled” channels with this hookup. In order to record “scrambled” channels you should use Hookup 2.

The “Cable Mouse” is not used in this hookup.


VHF/UHF IN
VCR
WALL
VHF/UHF OUT
CONNECT DIRECTLY TO TV IF YOU DO NOT HAVE A CABLE BOX
CABLE BOX
IN
OUT
VHF/UHF
MATCH THE CONNECTION ON YOUR TV.
TV
VHF
UHF (NO CONNECTION)
VHF
UHF (NO CONNECTION)

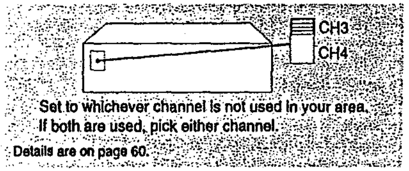
What You Can and Can't Do With This Hookup

What You Can Do
- Record unscrambled channel directly, without using a cable box.

What You Can't Do
- Record scrambled channels that require a cable box.
- Use the VCR's cable box control feature.

VCR Setup

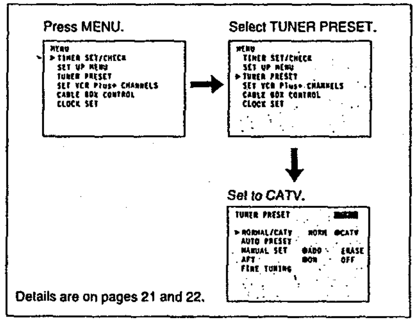
1 **Set the RF UNIT on the VCR's rear panel to CH 3 or CH 4.**
If you made A/V connections, skip this step.



Set to whichever channel is not used in your area.
If both are used, pick either channel.
Details are on page 60.

2 **Set CABLE BOX CONTROL to OFF (this is the factory setting) using the on-screen MENU.**

3 **Set NORMAL/CATV to CATV.**

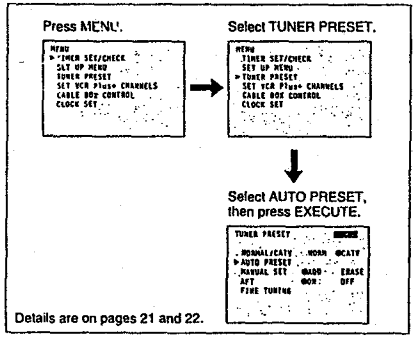

Press MENU.

Select TUNER PRESET.

Set to CATV.
MENU
▶TIMER SET/CHECK
SET UP MENU
TUNER PRESET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
TUNER PRESET
▶NORMAL/CATV NORM ●CATV
AUTO PRESET
MANUAL SET ●ADD ERASE
AFT ●ON OFF
FINE TUNING

Details are on pages 21 and 22.

4 **Preprogram the channels into the VCR.**


Press MENU.

Select TUNER PRESET.

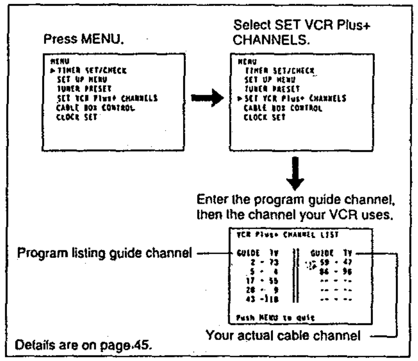
Select AUTO PRESET, then press EXECUTE.
MENU
▶TIMER SET/CHECK
SET UP MENU
TUNER PRESET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
TUNER PRESET
NORMAL/CATV NORM ●CATV
▶AUTO PRESET
MANUAL SET ●ADD ERASE
AFT ●ON OFF
FINE TUNING

Details are on pages 21 and 22.

VCR Plus+ Channel Setup

1 **Find the VCR Plus+ Channel Listing in your program guide.** For details, see page 44.

2 **If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows:**


Press MENU.

Select SET VCR Plus+ CHANNELS.

Enter the program guide channel, then the channel your VCR uses.
MENU
▶TIMER SET/CHECK
SET UP MENU
TUNER PRESET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
VCR Plus+ CHANNEL LIST
GUIDE TV
2 - 73
5 - 4
17 - 55
28 - 9
43 - 118
GUIDE TV
59 - 47
86 - 96
Push MENU to quit
Program listing guide channel
Your actual cable channel

Details are on page 45.

To Watch TV
1 Turn your VCR off, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.
2 Select the channel with your cable box (if you have one), or directly tune with your TV (if you don't).

To Watch the VCR
1a If you didn't use the A/V input:
- Turn on the cable box.
- Select CH 3 or CH 4 on the **cable box** (whichever you set on the back of the VCR).
- Select the output channel of the cable box (usually 2, 3 or 4) on your TV.

1b If you made the A/V connections on page 7:
Set your TV to the A/V input.
2 Insert a cassette and press ► PLAY.
Details are on page 30.

To Record A Program
1 Press VCR Plus+ on the Remote Commander.
2 Enter the program's PlusCode number.
3 Press ONCE, DAILY, or WEEKLY on the Remote Commander.
4 Insert a blank cassette.
5 Press TIMER REC on the Remote Commander.
Details are on page 46.

Hookup 4 - Incompatible Cable Box, Many "Scrambled" Channels

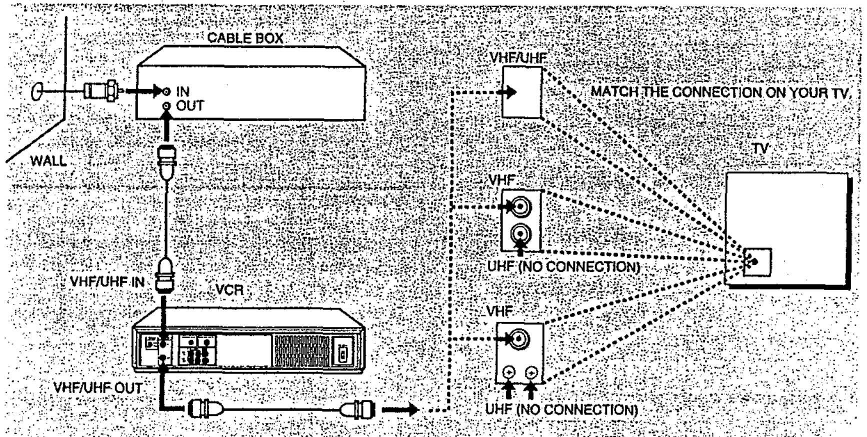
Cable Hookup

Recommended Use:
Use this hookup if your cable company cannot supply a cable box that is compatible with the VCR's cable box control feature, and your cable system "scrambles" all, or most, channels.

Background
This VCR can record most unscrambled cable channels. Some cable systems "scramble" specific channels, usually premium, or pay-per-view channels.

If your cable company cannot supply a cable box that is compatible with the VCR's cable box control, and it is necessary to use a cable box because all, or most, channels are "scrambled", you must use this hookup. It will be necessary to set the cable box channel manually for each recording.

If your cable company cannot supply a compatible cable box, and your cable system only "scrambles" a few channels, use Hookup 3.


CABLE BOX
IN
OUT
WALL
VHF/UHF IN
VCR
VHF/UHF OUT
VHF/UHF
MATCH THE CONNECTION ON YOUR TV.
TV
VHF
UHF (NO CONNECTION)
VHF
UHF (NO CONNECTION)

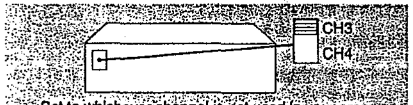
What You Can and Can't Do With This Hookup

What You Can Do
- Record any channel by selecting the channel on the cable box.

What You Can't Do
- Record with the cable box turned off.
- Record by selecting channels directly from the VCR.
- Record one channel while watching another channel.
- Use the VCR's cable box control feature.

VCR Setup

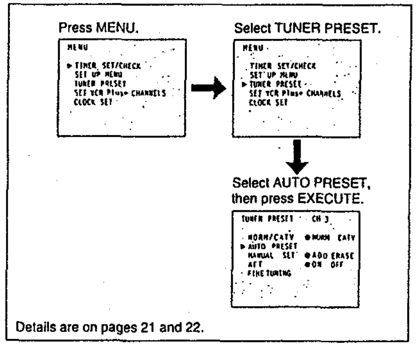
1 Set the RF UNIT on the VCR's rear panel to CH 3 or CH 4.
If you made A/V connections, skip this step.



Set to whichever channel is not used in your area.
If both are used, pick either channel.
Details are on page 60.

2 Switch on your cable box.

3 Preprogram the channels into the VCR.


MENU
▶ TIMER SET/CHECK
SET UP MENU
TUNER PRESET
SET VCR Plus+ CHANNELS
CLOCK SET
TUNER PRESET CH 3
NORM/CATV ●NORM CATV
▶ AUTO PRESET
MANUAL SET ●ADD ERASE
AFT ●ON OFF
FINE TUNING

Press MENU.

Select TUNER PRESET.

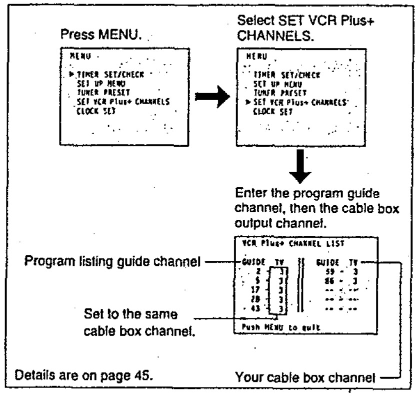
Select AUTO PRESET, then press EXECUTE.

Details are on pages 21 and 22.

VCR Plus+ Channel Setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details, see page 44.

2 For all channels that you want to record, set each channel to the channel that your cable box uses for its output (usually 2, 3, or 4), as follows:


MENU
▶ TIMER SET/CHECK
SET UP MENU
TUNER PRESET
SET VCR Plus+ CHANNELS
CLOCK SET
VCR Plus+ CHANNEL LIST
GUIDE TV
2 - 3
5 - 3
17 - 3
28 - 3
43 - 3
GUIDE TV
59 - 3
86 - 3
Push MENU to quit
Program listing guide channel
Set to the same cable box channel.
Your cable box channel

Press MENU.

Select SET VCR Plus+ CHANNELS.

Enter the program guide channel, then the cable box output channel.

Details are on page 45.

To Watch the TV

1 Turn your VCR off, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.
2 Switch on your cable box.
3 Tune the TV to the cable box output channel (usually 2, 3, or 4).
4 Select the channel that you want to watch with your cable box.

To Watch the VCR

1 Tune the TV to CH 3 or CH 4, (or to A/V input if you made A/V connections.)
2 Insert a cassette and press ▶ PLAY.

Details are on page 30.

To Record A Program

1 Switch on the cable box.
2 Select the channel you wish to record on the cable box.
3 Press VCR Plus+ on the Remote Commander.
4 Enter the program's PlusCode number.
5 Press ONCE, DAILY, or WEEKLY on the Remote Commander.
6 Insert a blank cassette.
7 Press TIMER REC on the Remote Commander.
8 Leave the cable box on.

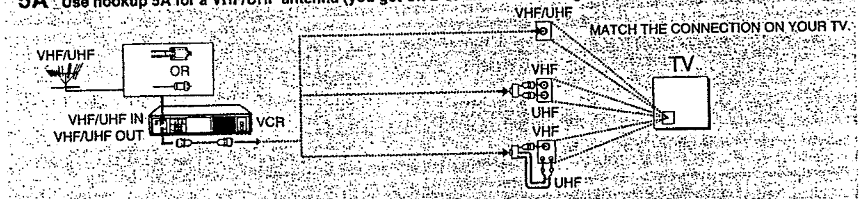
Details are on page 46.

Hookup 5

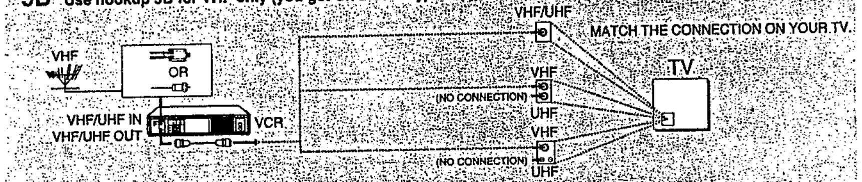
Antenna Hookup

Make the following connections if you're using an antenna (not cable TV).

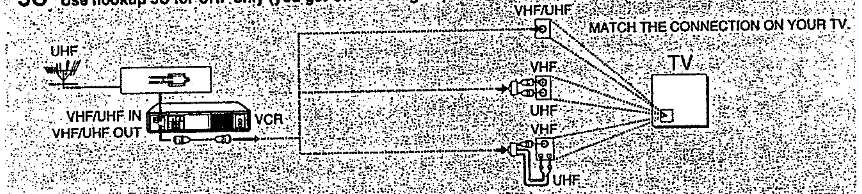
5A Use hookup 5A for a VHF/UHF antenna (you get Ch 2-13 and Ch 14 or higher).


VHF/UHF
OR
VHF/UHF IN
VHF/UHF OUT
VCR
VHF/UHF
VHF
UHF
VHF
UHF
MATCH THE CONNECTION ON YOUR TV.
TV

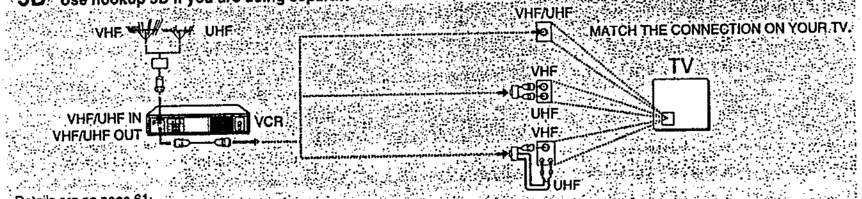
5B Use hookup 5B for VHF only (you get Ch 2-13 only).


VHF
OR
VHF/UHF IN
VHF/UHF OUT
VCR
VHF/UHF
VHF
(NO CONNECTION)
UHF
VHF
(NO CONNECTION)
UHF
MATCH THE CONNECTION ON YOUR TV.
TV

5C Use hookup 5C for UHF only (you get Ch 14 or higher).


UHF
VHF/UHF IN
VHF/UHF OUT
VCR
VHF/UHF
VHF
UHF
VHF
UHF
MATCH THE CONNECTION ON YOUR TV.
TV

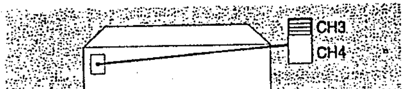
5D Use hookup 5D if you are using separate VHF and UHF antennas.


VHF
UHF
VHF/UHF IN
VHF/UHF OUT
VCR
VHF/UHF
VHF
UHF
VHF
UHF
MATCH THE CONNECTION ON YOUR TV.
TV

Details are on page 61.

VCR Setup

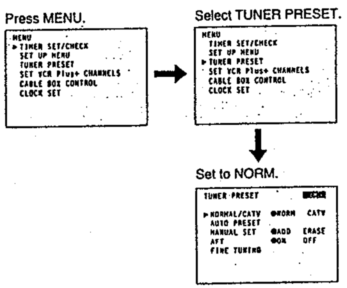
1 **Set the RF UNIT on the VCR's rear panel to CH 3 or CH 4.**
If you made A/V connections, skip this step.



Set to whichever channel is not used in your area.
If both are used, pick either channel.

Details are on page 60.

2 **Set NORMAL/CATV to NORM.**


MENU
▶TIMER SET/CHECK
SET UP MENU
TUNER PRESET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
MENU
TIMER SET/CHECK
SET UP MENU
▶TUNER PRESET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
TUNER PRESET
▶NORMAL/CATV ●NORM CATV
AUTO PRESET
MANUAL SET ●ADD ERASE
AFT ●ON OFF
FINE TUNING

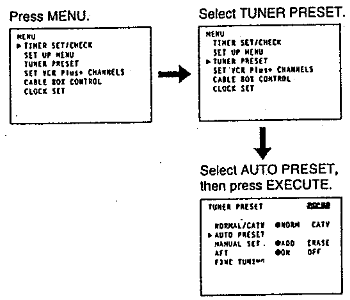
Press MENU.

Select TUNER PRESET.

Set to NORM.

Details are on pages 21 and 22.

3 **Preprogram the channels into the VCR.**


MENU
▶TIMER SET/CHECK
SET UP MENU
TUNER PRESET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
MENU
TIMER SET/CHECK
SET UP MENU
▶TUNER PRESET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
TUNER PRESET
NORMAL/CATV ●NORM CATV
▶AUTO PRESET
MANUAL SET ●ADD ERASE
AFT ●ON OFF
FINE TUNING

Press MENU.

Select TUNER PRESET.

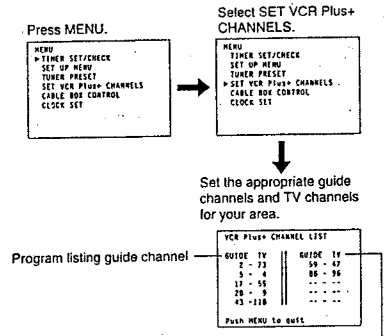
Select AUTO PRESET, then press EXECUTE.

Details are on pages 21 and 22.

VCR Plus+ Channel Setup

1 **Find the VCR Plus+ Channel Listing in your program guide.** For details, see page 44.

2 **If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows:**


MENU
▶TIMER SET/CHECK
SET UP MENU
TUNER PRESET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
MENU
TIMER SET/CHECK
SET UP MENU
TUNER PRESET
▶SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
VCR Plus+ CHANNEL LIST
GUIDE TV
2 - 73
5 - 4
17 - 55
28 - 9
43 - 118
GUIDE TV
59 - 47
86 - 96
-- - --
-- - --
-- - --
Push MENU to quit
Program listing guide channel
Your actual TV channel

Press MENU.

Select SET VCR Plus+ CHANNELS.

Set the appropriate guide channels and TV channels for your area.

Details are on page 45.

To Watch the TV

1 Turn your VCR off, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.

2 Tune the TV normally.

To Watch the VCR

1 Tune the TV to CH 3 or CH 4, whichever you set on the back of the VCR. (If you made the A/V connections on page 7, set your TV to the A/V input instead.)

2 Insert a cassette and press ▶ PLAY. If there's no picture on your TV, press the VCR's TV/VTR button until the VTR indicator comes on in the VCR's display window.

Details are on page 30.

To Record A Program

1 Press VCR Plus+ on the Remote Commander.

2 Enter the program's PlusCode number.

3 Press ONCE, DAILY, or WEEKLY on the Remote Commander.

4 Insert a blank casette.

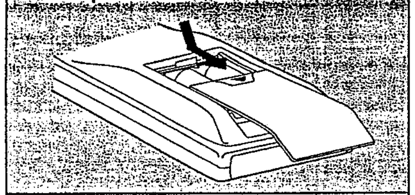
5 Press TIMER REC on the Remote Commander.

Details are on page 46.

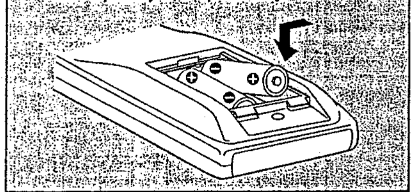
Preparing the Remote Commander

Inserting Batteries

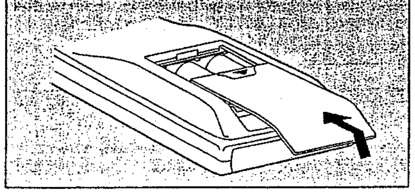
1 Slide open and remove the cover.



2 Insert two size AA (IEC designation R6) batteries with the polarity lined up correctly.



3 Replace and close the cover.



Operating the VCR with the Remote Commander

Set the TV/VTR remote control selector at the top of the Remote Commander to "VTR."

If you are using a Sony TV

You can use the Remote Commander of this VCR to operate the TV. When doing this, slide the TV/VTR remote control selector to "TV." Buttons on the Remote Commander with a dot (•) on or beside them can be used to operate your TV. To operate the VCR, return the TV/VTR remote control selector to "VTR.".

How to Use the Remote Commander

When you operate the VCR using the Remote Commander, point it at the remote sensor located on the VCR. For the location of the remote sensor, see "Identifying the Parts and Controls" on page 62.

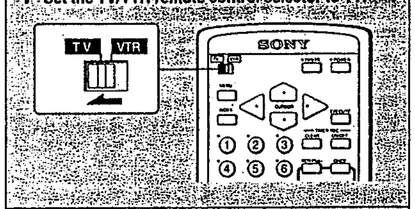
When using the Remote Commander to change channels on a cable box, with the VCR's Cable box control feature turned on, point the Remote Commander at the VCR, not the cable box. For best results, separate the VCR and cable box.

Notes on the handling of batteries
- With normal use, the batteries should last for approximately six months.
- If you do not use the Remote Commander for an extended period of time, remove the batteries to avoid possible damage from battery leakage.
- Do not use a new battery together with an old one.
- Do not use different types of batteries.

Setting the Remote Commander to Control other Manufacturers' TV Sets

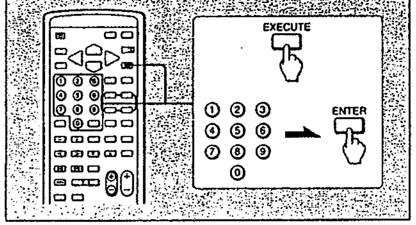
The following steps show you how to use your Remote Commander to set the appropriate manufacturers' code number for a non-Sony TV.

1 Set the TV/VTR remote control selector to TV.



2 While pressing the EXECUTE button, press the manufacturer's code number and the ENTER button.

You can now use the POWER, VOL +/–, CHANNEL +/– and the TV/VTR buttons on your Remote Commander to operate the TV.



NOTES:
- The TV/VTR button may not function, depending on the manufacturer. If this problem occurs, use your TV's remote control unit.
- If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.
- If you enter a new code number, the code number previously entered will be erased.
- If you release the EXECUTE button before pressing the ENTER button, the setting will be cancelled.
- Some manufacturers may use a different remote control system from the one programmed to work with your VCR. If this is the case, and you are unable to operate the TV with your Remote Commander, use the TV's remote control unit instead.
- When you replace the batteries in the Remote Commander, the code number automatically resets to 1 (SONY). Reset the appropriate code number, if necessary.

Manufacturers and their Code Numbers

Your Remote Commander is preprogrammed for use with a number of different TV sets. If your TV is listed in the table below, set the appropriate manufacturer's code prior to using the Remote Commander.

Manufacturer	Code Number	Manufacturer	Code Number
SONY	1	Philco	3, 4
Akai	4	Philips	8
AOC	4	Pioneer	15
Centurion	12	Portland	3
Coronado	3	Quasar	6
Curtis-Mathes	12	Radio Shack	5
Daytron	12	RCA	4, 10
Fisher	11	Sampo	12
General Electric	6, 10	Sanyo	11
Hitachi	2, 3	Scott	12
J.C.Penney	4, 12	Sears	7,10,11
JVC	9	Sylvania	8, 12
KMC	3	Teknika	3, 8
Magnavox	3, 8,12	Toshiba	7
Marantz	4, 13	Wards	3, 4, 12
MGA/Mitsubishi	4, 12,13	Yorx	12
NEC	4, 12	Zenith	14
Panasonic	6		

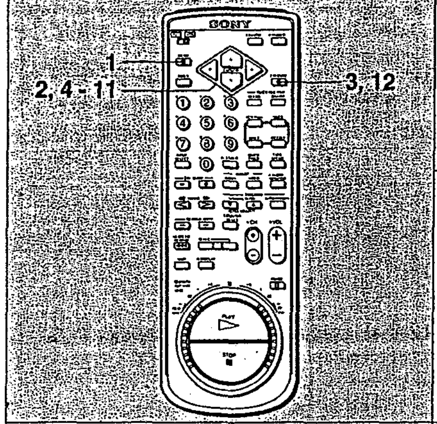
Setting the Time and Date

You can set the VCR time and date on the TV screen using the Remote Commander.

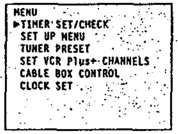
Example of Time and Date Setting

Example: To set to 3:32 pm, July 4, 1993

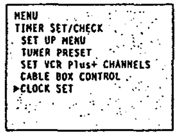
Use ▲ and ▼ to move the cursor.
Use ◀ and ▶ to select the items.


SONY
1
2, 4 - 11
3, 12

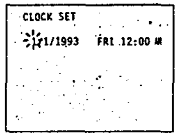
1 **Press MENU.**
The main MENU appears.


MENU
▶TIMER SET/CHECK
SET UP MENU
TUNER PRESET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET

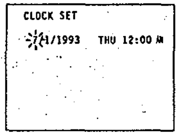
2 **Press ▲ or ▼ to move the cursor (▶) to CLOCK SET.**


MENU
TIMER SET/CHECK
SET UP MENU
TUNER PRESET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
▶CLOCK SET

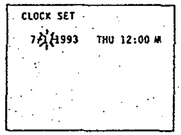
3 **Press EXECUTE.**
"1/1 1993 FRI 12:00 AM" is displayed. The leftmost 1, in the "month" position, flashes.


CLOCK SET
1/1/1993 FRI 12:00 AM

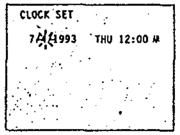
4 **Press ▲ or ▼ until 7 appears in the month position.**


CLOCK SET
7/1/1993 THU 12:00 AM

5 **Press ▶ to make the next number in the "day" position flash.**

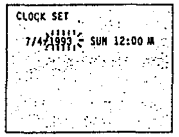

CLOCK SET
7/1/1993 THU 12:00 AM

6 **Press ▲ or ▼ until "4" appears in the day position.**
The day of the week is set automatically.

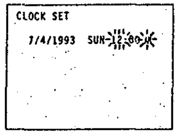

CLOCK SET
7/4/1993 THU 12:00 AM

Setting the Time and Date

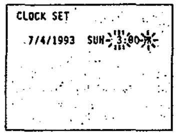
7 **Press ▶ to make the "year" position flash and press ▲ to change the year.**


CLOCK SET
7/4/1993 SUN 12:00 AM

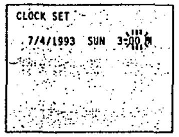
8 **Press ▶ to make the "time" position flash.**


CLOCK SET
7/4/1993 SUN 12:00 AM

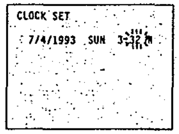
9 **Press ▲ or ▼ until "3:00 PM" appears.**


CLOCK SET
7/4/1993 SUN 3:00 PM

10 **Press ▶ to make the "minutes" position flash.**


CLOCK SET
7/4/1993 SUN 3:00 PM

11 **Press ▲ or ▼ until "32" appears in the minutes position.**


CLOCK SET
7/4/1993 SUN 3:32 PM

12 **Press EXECUTE at the same time that you hear the time signal.**
Pressing EXECUTE will set the clock to 3:32 pm 00 seconds.

NOTES:
- Do not set the time and date during timer-activated recording, timer recording standby or quick-timer recording.
- When the time and date clock is displayed, the clock keeps running as long as no changes are made. The seconds are not reset to 00 when you return to the original screen.

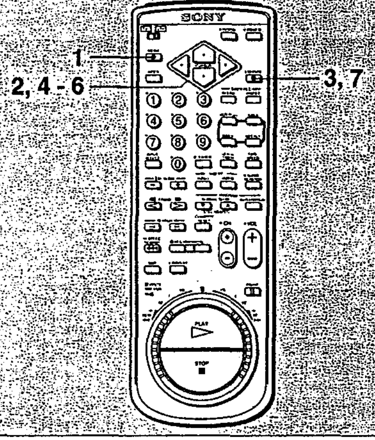
Presetting the Active Channels

This VCR is capable of receiving VHF channels 2 to 13, UHF channels 14 to 69 and CATV channels 1 to 125. These channels can be preset using the Remote Commander and the TUNER PRESET display. First, we recommend that you preset the active channels in your area using the automatic preset mode. Then, if there are any unwanted channels, disable them manually. If you have already decided which channels you wish to preset on the VCR, set them directly using the channel number buttons.

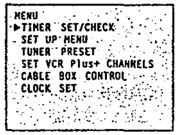
Before presetting channels, check the following points:
- Turn on the VCR and the TV.
- If you have connected the TV and the VCR using the VHF/UHF OUT on the VCR only, make sure that the TV is set to the correct channel (CH 3 or CH 4) for the VCR.
- Press TV/VTR to display the VTR indicator in the display window on the VCR.
- Press INPUT SELECT so that the channel number appears in the display window on the VCR.
- It is not necessary to use the TUNER PRESET function if the CABLE BOX CONTROL is set to "ON." If you want to use the TUNER PRESET function, make sure the CABLE BOX CONTROL is set to "OFF."

Presetting All Receivable Channels Automatically

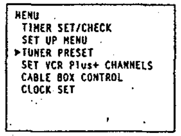
Use ▲ and ▼ to move the cursor.
Use ◀ and ▶ to select the items.



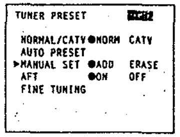
1 **Press MENU.**
The main MENU appears.


MENU
▶TIMER SET/CHECK
SET UP MENU
TUNER PRESET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET

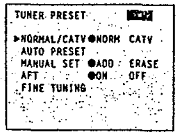
2 **Press ▲ or ▼ to move the cursor (▶) to TUNER PRESET.**


MENU
TIMER SET/CHECK
SET UP MENU
▶TUNER PRESET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET

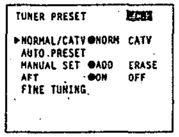
3 **Press EXECUTE.**
The TUNER PRESET menu is displayed.


TUNER PRESET
NORMAL/CATV ●NORM CATV
AUTO PRESET
▶MANUAL SET ●ADD ERASE
AFT ●ON OFF
FINE TUNING

4 **Press ▲ or ▼ to move the cursor to NORMAL/CATV.**


TUNER PRESET
▶NORMAL/CATV ●NORM CATV
AUTO PRESET
MANUAL SET ●ADD ERASE
AFT ●ON OFF
FINE TUNING

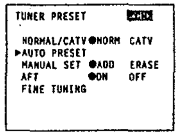
5 Press ◀ or ▶ to select NORM or CATV.
NORM presets the VHF and UHF channels; CATV presets your cable TV channels. The lowest channel number, 2 for NORM and 1 for CATV, will appear on the screen.



```
TUNER PRESET
▶NORMAL/CATV ●NORM  CATV
 AUTO.PRESET
 MANUAL SET  ●ADD   ERASE
 AFT         ●ON    OFF
 FINE TUNING
```

7 Press EXECUTE
Receivable channels are preset in numerical sequence. When no more channels can be found, the presetting stops and the picture of the lowest numbered channel is displayed on the tape counter. The message "Please wait" is flashing while presetting on the TV screen.

6 Press ▲ or ▼ to move the cursor to AUTO PRESET.



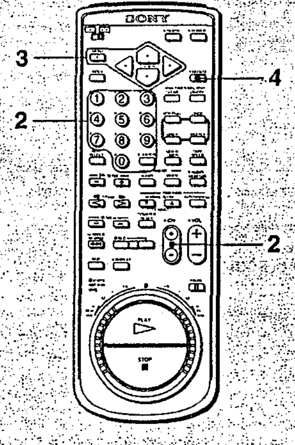
```
TUNER PRESET
 NORMAL/CATV ●NORM  CATV
▶AUTO PRESET
 MANUAL SET  ●ADD   ERASE
 AFT         ●ON    OFF
 FINE TUNING
```

NOTE:
The VCR automatically exits from the TUNER PRESET menu if you don't proceed for more than one minute.

Presetting Desired Channels or Disabling Unwanted Channels

After automatic presetting, you can disable and/or add channels.

Use ▲ and ▼ to move the cursor.
Use ◀ and ▶ to select the items.



1 Follow steps 1 to 3 in "Presetting All Receivable Channels Automatically" on page 21.

2 To disable channels, press CH +/– to select the channel.
To add channels, press channel number buttons (0 to 9) and ENTER key to select the channel.

3 To disable channels, press ◀ or ▶ to select ERASE.
To add channels, press ◀ or ▶ to select ADD.

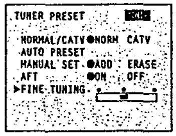
4 Press EXECUTE.
When you press CH +/–, the disabled channels are removed and the added channels are displayed.

Fine-tuning

Normally, the Auto Fine Tuning (AFT) setting on the menu is set to "ON," and the AFT function fine-tunes the picture. If the picture of a channel is not acceptable, fine-tune it manually.

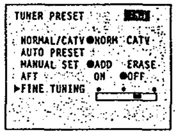
1 Display the TUNER PRESET menu referring to steps 1 to 3 in "Presetting All Receivable Channels Automatically" (page 21).

2 Press ▲ or ▼ to move the cursor to FINE TUNING.
The fine tuning indicator is displayed.



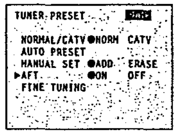
```
TUNER PRESET
 NORMAL/CATV ●NORM  CATV
 AUTO PRESET
 MANUAL SET  ●ADD   ERASE
 AFT         ●ON    OFF
▶FINE TUNING
```

3 Press ◀ or ▶ to get a clearer picture.
The AFT ON/OFF automatically switches to "OFF."



```
TUNER PRESET
 NORMAL/CATV ●NORM  CATV
 AUTO PRESET
 MANUAL SET  ●ADD   ERASE
 AFT          ON   ●OFF
▶FINE TUNING
```

4 Press ▲ to move the cursor to AFT and select "ON" if you cannot get a better picture. Then, press EXECUTE.



```
TUNER PRESET
 NORMAL/CATV ●NORM  CATV
 AUTO PRESET
 MANUAL SET  ●ADD   ERASE
▶AFT         ●ON    OFF
 FINE TUNING
```

The FINE TUNING indicator

The FINE TUNING indicator shows the operable fine-tuning range and stops at the optimal point of reception. When a broadcast is received in an optimal condition, the indicator may not be at the center position.

Cable TV Channel Assignment

Cable TV systems use letters or numerals to designate the channels. To tune-in a CATV channel, refer to the chart below which shows the CATV channel, numbers on this VCR and the corresponding CATV channel. Note that the channel number assignment shown in the chart may not correspond to the channel number used by your local cable company. Check with your local cable TV company for more information on the available channels.

Number on this VCR	Corresponding CATV channel
1	A-8
2	2
...	...
13	13
14	A
15	B
16	C
17	D
18	E
19	F
20	G
21	H
22	I
23	J
24	K
25	L
26	M
27	N
28	O
29	P
30	Q
31	R
32	S
33	T
34	U
35	V
36	W
37	W+1
...	...
94	W+58
95	A-5
96	A-4
97	A-3
98	A-2
99	A-1
100	W+59
...	...
125	W+84

This VCR is designed to correspond to the standard cable system. However, the cable TV services may vary from area to area. Your local cable TV company may adopt either the HRC[1)] or IRC[2)] cable system. This VCR is capable of receiving either of these cable systems in the best condition.

1) **HRC (Harmonic Related Carriers)**
All channels except for 5 and 6 are 1250 kHz lower than the standard cable system. Channels 5 and 6 are 750 kHz higher than the standard cable system.

2) **IRC (Incremental Related Carriers)**
All channels except for 5 and 6 are the same as the standard cable system. Channels 5 and 6 are 2000 kHz higher than the standard cable system.

FINE TUNING indicator for receiving HRC or IRC cable systems

Even when the signals are received in optimal condition, the FINE TUNING indicator will not stay at the center position for channels higher or lower that the standard cable system due to the difference in the frequency.

NOTE:
Many cable TV systems use scrambled or encoded signals for certain channels, usually premium or pay-per-view channels.
A cable box is necessary to receive scrambled channels.

Activating the Cable Box Control Function

Your VCR includes a Cable Box Control feature which allows the VCR to control channel selection on most cable boxes.

The use of compatible cable box brand is shown on the following page.

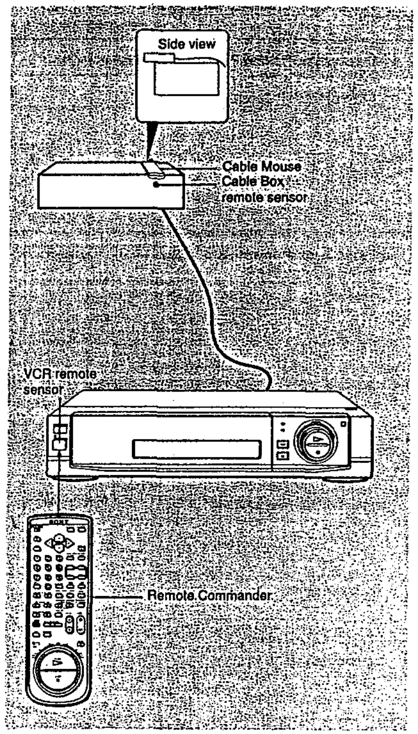
The CABLE BOX CONTROL must be set to "ON," and the code number and the output channel must be set to match your cable box before you can use it. Detail for connecting your cable box to the VCR to control the cable box with the Remote Commander, make connections using Hookup 2 on page 8.

When CABLE BOX CONTROL is set to "ON," the VCR will control the cable box channel for timer recording. In addition, you can use the VCR's Remote Commander to change channels on the cable box whenever the cable box and the VCR are turned on.

Note on setting the cable box and Cable Mouse

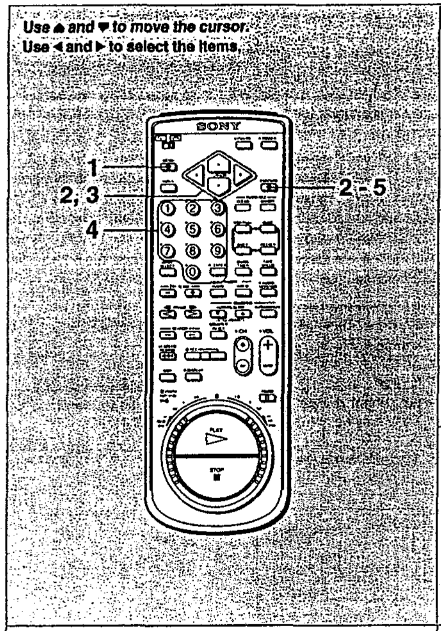
Make sure that the Cable Mouse is positioned near to and above the sensor on the cable box so that the signal from the Cable Mouse is received correctly.

The cable box should not be too close to the VCR.

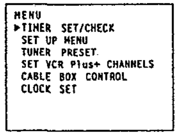


Setting the Cable Box Control

To use the cable box control function, enter the cable box code number and select the cable box output channel as explained below.

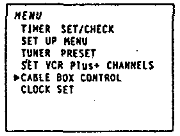

Use ▲ and ▼ to move the cursor.
Use ◀ and ▶ to select the items.

1 Press MENU.
The main MENU appears.



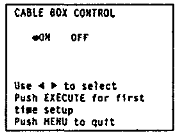
```
MENU
▶TIMER  SET/CHECK
 SET UP MENU
 TUNER  PRESET
 SET VCR Plus+ CHANNELS
 CABLE  BOX  CONTROL
 CLOCK  SET
```

2 Press ▲ or ▼ to move the cursor (▶) to CABLE BOX CONTROL, then press EXECUTE.



```
MENU
 TIMER  SET/CHECK
 SET UP MENU
 TUNER  PRESET
 SET VCR Plus+ CHANNELS
▶CABLE BOX CONTROL
 CLOCK SET
```

3 Press ◀ or ▶ to select "ON," then press EXECUTE.

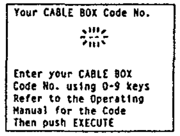


```
CABLE BOX CONTROL

   ●ON   OFF


Use ◀ ▶ to select
Push EXECUTE for first
time setup
Push MENU to quit
```

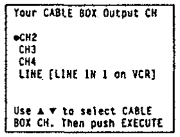
4 Enter the cable box code number under CABLE BOX Code No. as listed in the chart on page 26, then press EXECUTE.



```
Your CABLE BOX Code No.


Enter your CABLE BOX
Code No. using 0-9 keys
Refer to the Operating
Manual for the Code
Then push EXECUTE
```

5 Select the cable box output channel under CABLE BOX OUTPUT CH, then press EXECUTE.



```
Your CABLE BOX Output CH

●CH2
 CH3
 CH4
 LINE [LINE IN 1 on VCR]


Use ▲ ▼ to select CABLE
BOX CH. Then push EXECUTE
```

Activating the Cable Box Control Function

Cable box code number chart

In step 4 on page 25, enter the code number of your cable box as listed in the chart below.

Brand	IR Code No.
Hamlin	14, 15
Jerrold/ General Instrument	1, 2, 3, 4
Oak	17, 18
Panasonic	12, 13
Philips	22
Pioneer	8, 9
Regal	14,15
Regency	20
Scientific Atlanta	5, 6
Tocom	10, 11
Zenith	7

The VCR contains 42 cable box codes (1-42). If your cable box is not listed in the chart, it may be possible to control it using one of the other (1-42) codes. You may want to try other codes before calling your cable company to see if they can supply a cable box that is in the chart.

If your cable box is listed in the chart, but does not respond, first check the placement of the Cable Mouse (see page 24), and try placing the cable box and VCR away from each other (do not place the cable box directly on top of the VCR). If the cable box still does not respond, you can try other codes.

Checking the Cable Box Control Setting

Using the information provided below, check to make sure that you have made the correct Cable Box Control setting.

Note

Make sure to do the following when using a cable box.

- Tap the buttons lightly. Do not hold the buttons down.
- Position the cable box away from the VCR. Do not point the Remote Commander at the cable box. Point it at the VCR.

1 Press CH +/– on the Remote Commander.
Does the channel indicator on the cable box change?

2 Press all 10 channel number buttons on the Remote Commander (0 to 9). Does the channel indicator on the cable box change?

If the answer to both 1 and 2 is "yes," you have made the correct setting.

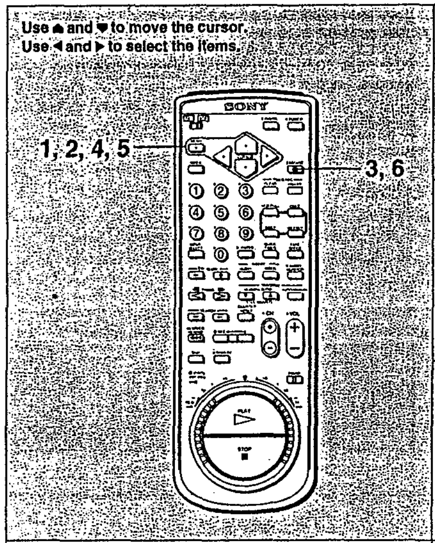
If you cannot get your VCR to control the cable box

Try the setup again making sure to use the correct code number.

If, after checking your setup, you are sure that the VCR will not control your cable box, contact your cable company. They may be able to supply a compatible cable box.

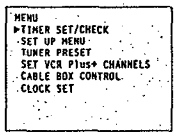
Using the SET UP MENU

Before using your VCR, make your preferred audio and video display choices from the SET UP MENU.



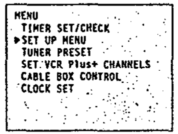
Use ▲ and ▼ to move the cursor.
Use ◀ and ▶ to select the items.

1 **Press MENU.**
The main MENU appears.



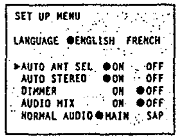
```
MENU
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

2 **Press ▲ or ▼ to move the cursor (▶) to SET UP MENU.**



```
MENU
 TIMER SET/CHECK
▶SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

3 **Press EXECUTE.**
The SET UP MENU appears.

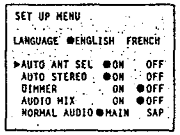


```
SET UP MENU

LANGUAGE ●ENGLISH  FRENCH

▶AUTO ANT SEL  ●ON    OFF
 AUTO STEREO   ●ON    OFF
 DIMMER         ON   ●OFF
 AUDIO MIX      ON   ●OFF
 NORMAL AUDIO ●MAIN   SAP
```

4 **Press ▲ or ▼ to move the cursor to the desired menu choice.**
(For Menu Choices, see the next page.)



```
SET UP MENU

LANGUAGE ●ENGLISH  FRENCH

▶AUTO ANT SEL  ●ON    OFF
 AUTO STEREO   ●ON    OFF
 DIMMER         ON   ●OFF
 AUDIO MIX      ON   ●OFF
 NORMAL AUDIO ●MAIN   SAP
```

5 **Press ◀ or ▶ to move the dot (•) to the desired setting.**

6 **Press EXECUTE to return to the original screen.**
The settings are stored. The displayed page is stored unless the power plug is disconnected.

Menu Choices

LANGUAGE (Canadian versions only)

You can preset your VCR to display screen information in either English or French.

AUTO ANT SEL (Automatic Antenna Selector)

- If your TV is connected only to VHF/UHF OUT on the VCR, set AUTO SET SEL to "ON."

When playing back a cassette, the picture is automatically displayed on the screen simply by selecting the channel for the VCR on the TV. To watch TV programs selected on the TV, press TV/VTR to turn off the VTR indicator in the display window.

- If your TV is connected to both VHF/UHF OUT and LINE OUT on the VCR, set to "OFF."

When playing back a cassette, select the input for the VCR on the TV.

To watch TV programs selected on the TV, select the tuner input.

AUTO STEREO

If a stereo program's reception is poor, set to "OFF." The program is recorded in monaural but sound quality may improve. For details, see page 36.

DIMMER

Select "ON" to make the display window dimmer and select "OFF" to make the display window brighter.

AUDIO MIX

To listen to sound recorded on both the hi-fi video track and the normal audio track of the audio tape, set to "ON." For details, see page 33.

NORMAL AUDIO

When there is a SAP (Second Audio Program) broadcast, select SAP to record the SAP sound on the normal audio track. For details, see page 36.

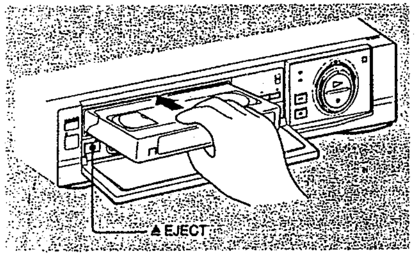
NOTE:
The VCR automatically exits from the main MENU and SET UP MENU if you don' t proceed for more than one minute.

Playback

This section shows you how to play back a video cassette.

Inserting a Video Cassette

1. **Insert a video cassette as shown below.**
2. **Gently press the center of the front side of the cassette until the mechanism draws it into the compartment.**
   When the cassette has been loaded, the cassette indicator (▭) lights in the display window and the VCR turns on automatically.



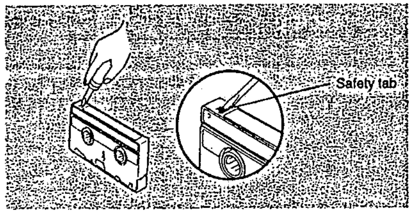
NOTE:
If you insert a cassette without a safety tab, playback starts automatically (auto playback function).

Ejecting the cassette

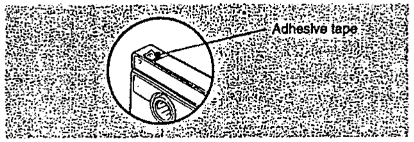
Press ▲ EJECT on the VCR. You can eject the cassette when the power is off. When you press ▲ EJECT, the power is turned on. After ejecting the cassette, the power automatically shuts off.

Protecting your cassette against accidental erasure

Cassettes have a safety tab to protect against accidental recording. Break off the safety tab with a screwdriver or other tool. If the safety tab is removed, the cassette will be ejected when you try to record on it.



To record on a cassette with the safety tab broken off, simply cover the tab hole with adhesive tape.



Maximum recording time of a cassette

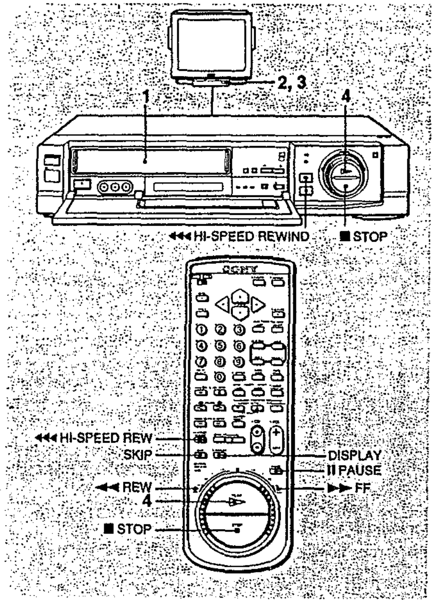
Recording in either the SP or EP mode is possible with this VCR. When recording, select the desired recording mode (SP or EP) using TAPE SPEED on the Remote Commander. During playback, the VCR automatically detects the recording format, and then plays back the cassette in the appropriate mode. A cassette recorded in the EP mode runs three times as slowly as a cassette recorded in the SP mode. Refer to the chart below for the recording/playback times available.

Cassette tape	Recording / Playback time	
	SP mode	EP mode
T-180	3 hrs.	9 hrs.
T-160	2 hrs. 40 min.	8 hrs.
T-120	2 hrs.	6 hrs.
T-60	1 hr.	3 hrs.
T-30	30 min.	1 hr. 30 min.

Cassettes recorded in LP mode

Playback of cassettes recorded in LP mode is also possible with this VCR. However, playback in modes other than normal forward speed is not guaranteed. This VCR is not designed to record in the LP mode.

Playback


1
2, 3
4
◄◄◄ HI-SPEED REWIND
■ STOP
◄◄◄ HI-SPEED REW
SKIP
◄◄ REW
4
■ STOP
DISPLAY
II PAUSE
►► FF

1 **Insert a cassette.**

2 **Turn on the TV.**

3 **If your TV is connected to both VHF/UHF OUT and LINE OUT on the VCR, select the input for the VCR. If your TV is connected only to the VHF/UHF OUT on the VCR, select the channel for the VCR (CH 3 or CH 4).**

4 **Press ► PLAY.**

To stop playback
Press ■ STOP.

To stop playback for a moment
Press II PAUSE.
Press II PAUSE again or ► PLAY to resume playback.

To fast-forward the cassette at high speed during stop mode
Turn the DUAL MODE SHUTTLE ring to the right (►►).

To rewind the cassette during stop mode
Turn the DUAL MODE SHUTTLE ring to the left (◄◄).

To rewind the cassette at high speed
Press ◄◄◄ HI-SPEED REWIND.

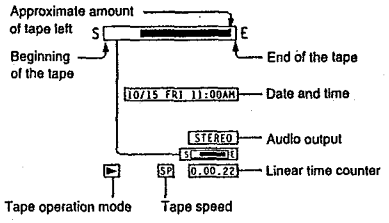
To rewind the cassette to its beginning and to play back automatically (auto playback function)
Press ► PLAY while depressing ◄◄◄ HI-SPEED REWIND or by using the DUAL MODE SHUTTLE ring.
You cannot use the Remote Commander for the auto playback function.

To reduce streaks and/or snow and obtain a clearer picture
Switch the PICTURE switch to NOISE REDUCTION when playing back rental or poor quality tapes.

When the cassette reaches its end
The cassette automatically rewinds to the beginning (auto rewind), and power remains on.

The Display

To delete or call up the Display on the TV screen, press DISPLAY on the Remote Commander.

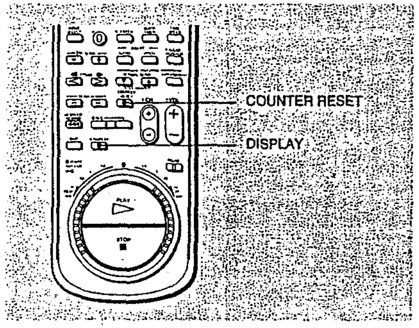

Approximate amount of tape left
S
E
Beginning of the tape
End of the tape
10/15 FRI 11:00AM
Date and time
STEREO
Audio output
SP
0.00.22
Linear time counter
Tape operation mode
Tape speed

To turn off the Display, press DISPLAY.

NOTES:
- The remaining tape length displayed is approximate. Therefore, use it only as an approximate reference.
- When you insert a cassette with a short tape length such as T-20, T-30 or a non-standard commercially available cassette, this indicator may not function correctly.
- The on-screen Display cannot be displayed on the screen during still mode, or slow motion playback.
- Audio output, tape operation mode, and tape speed are displayed when you make changes to them. They are displayed even when the Display is turned off.

Indexing Tape Contents

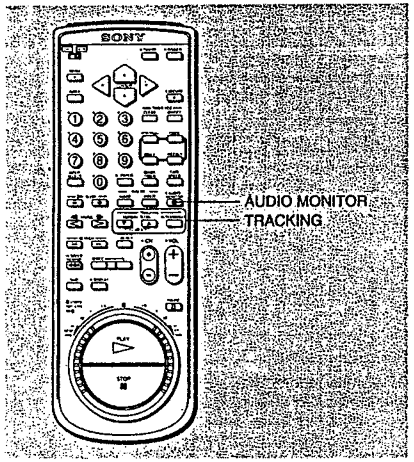
Before recording or playback, press COUNTER RESET on the Remote Commander to reset the counter to zero. By noting the setting, you can find that point later by referring to the counter. Use the label on the cassette to list the programs and their counter readings.


COUNTER RESET
DISPLAY

NOTES ON COUNTER READING:
- After a cassette is ejected, the counter reading is retained. When a cassette is reinserted the counter returns to "0H00M00S."
- The counter will not advance on portions of the tape on which no recording has been made.

Playing Back Externally-Recorded Tapes

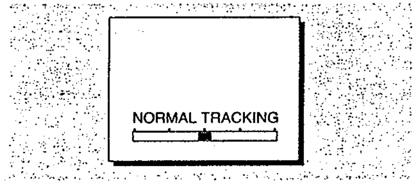
When playing back a cassette recorded on another VCR, the tracking condition is automatically adjusted. You can also adjust the tracking condition and the sharpness manually according to the following instructions.



Manual tracking adjustment

When the playback picture has streaks and/or snow during normal playback, adjust the picture manually with TRACKING NORMAL/SLOW and STILL ADJUST ▼/▲.

Press either ▲ or ▼ for the best possible picture. The tracking meter will appear on the TV screen and the AUTO TRACKING indicator will turn off.



Automatic tracking adjustment

The tracking condition is automatically adjusted on this VCR. The AUTO TRACKING indicator flashes while the VCR is searching for the optimal tracking condition and lights when optimum playback picture is obtained. The automatic tracking control is activated in the following conditions:

- When the cassette is inserted for the first time
- When the recording mode on the playback cassette is switched from SP to EP and back again
- When the picture is distorted by scratches on the cassette
- When the AUTO TRACKING indicator is turned on by pressing TRACKING AUTO/MANUAL after the picture is adjusted manually

NOTES:
- Auto tracking adjustment is not possible for cassettes recorded in LP mode.
- Auto tracking adjustment may be impossible and the tracking indicator may not appear on the TV screen when the recording condition of the cassette is poor.
- During auto tracking adjustment, streaks or noise may occur.

Selecting the Monitor Sound

You can play back cassettes on which stereo sound or bilingual programs are recorded.
Press AUDIO MONITOR to select the desired sound mode.
Each press of the button changes the display on the TV screen.

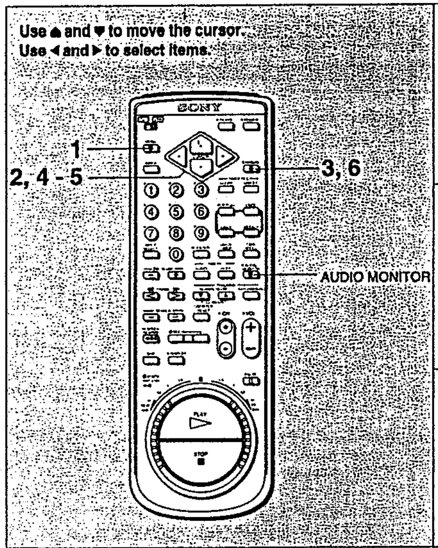
NOTE:
When you play back a cassette recorded in monaural, the sound is heard in monaural regardless of the setting of the AUDIO MONITOR.

Sound Mode

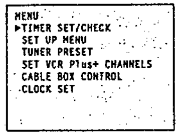
Stereo Indicator	On-screen Display	Sound heard	
		Stereo tape	Bilingual tape
Lights up	STEREO	Stereo	Left and right channels
Lights up	L_{CH}	Left channel	Left channel
Lights up	R_{CH}	Right channel	Right channel
No indication	None	Monaural on normal audio track	Sound on normal audio track (SAP)

Listening to Mixed Hi-Fi and Normal Track Sound

You can hear sound recorded on the hi-fi video track and the normal audio track simultaneously. This allows you to listen to an audio-inserted cassette.

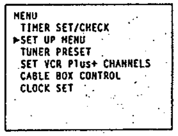


1 Press MENU.
The main MENU appears.



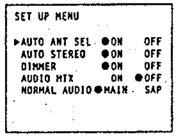
```
MENU
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

2 Press ▲ or ▼ to move the cursor (▶) to SET UP MENU.



```
MENU
 TIMER SET/CHECK
▶SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

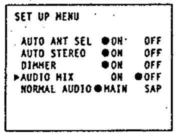
3 Press EXECUTE.
The SET UP MENU appears.



```
SET UP MENU

▶AUTO ANT SEL  ●ON    OFF
 AUTO STEREO   ●ON    OFF
 DIMMER        ●ON    OFF
 AUDIO MIX      ON   ●OFF
 NORMAL AUDIO ●MAIN   SAP
```

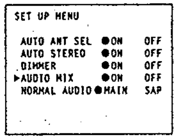
4 Press ▲ or ▼ to move the cursor to AUDIO MIX.



```
SET UP MENU

 AUTO ANT SEL  ●ON    OFF
 AUTO STEREO   ●ON    OFF
 DIMMER        ●ON    OFF
▶AUDIO MIX      ON   ●OFF
 NORMAL AUDIO ●MAIN   SAP
```

5 Press ◀ or ▶ to move the dot (•) to "ON."



```
SET UP MENU

 AUTO ANT SEL  ●ON    OFF
 AUTO STEREO   ●ON    OFF
 DIMMER        ●ON    OFF
▶AUDIO MIX     ●ON    OFF
 NORMAL AUDIO ●MAIN   SAP
```

6 Press EXECUTE to return to the original screen.

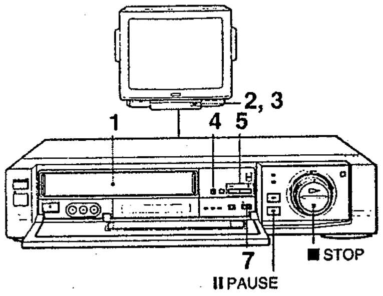
NOTES:
- When you set AUDIO MIX to "ON," the AUDIO MONITOR button does not function.
- Reset to "OFF" after listening to the sound in audio mix mode.

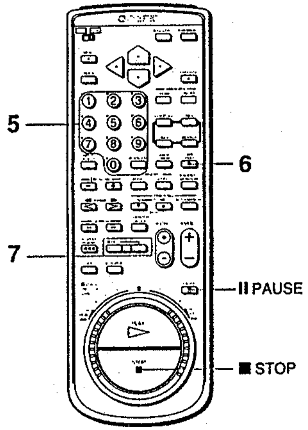
Recording TV Programs

Before you begin, check the following points:
- Make sure that the connections have been made correctly (see pages 6 to 15).
- Check the input mode indicator in the display window of the VCR.

CAUTION:
Television programs, films, video cassettes and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provisions of the copyright laws. Also, use of this recorder with cable television transmission may require authorization for the cable television transmission and/or program owner.

Recording TV Programs





1 **Insert a cassette.**
The VCR turns on automatically (auto power on).

2 **Turn on the TV.**
If you are using a cable box, turn it on.

3 **If your TV is connected to both VHF/UHF OUT and LINE OUT on the VCR, select the VCR input on the TV.**

4 **If your TV is connected only to VHF/UHF OUT, set the TV to the correct channel (CH 3 or CH 4), then press TV/VTR so that the VTR indicator lights up.**
Skip this step if your VCR is connected to both the VHF/UHF OUT and LINE OUT.

5 **Select the channel to be recorded with CHANNEL +/– or the channel number buttons and press ENTER.**

6 **Select SP or EP with TAPE SPEED (SP/EP).**
To select the best recording tape speed, see "Maximum Recording Time of a Cassette" on page 29.

7 **Press the two ● REC buttons on the Remote Commander at the same time, or the ● REC button on the VCR.**
The REC indicator lights up on the VCR.

To stop recording

Press ■ STOP.

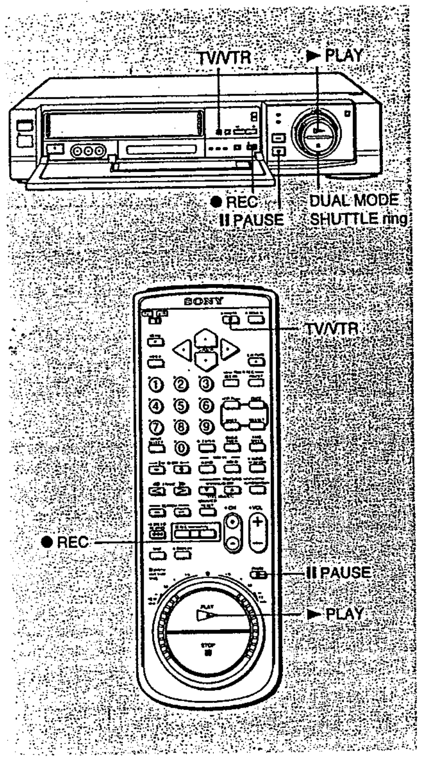
To pause the cassette

Press II PAUSE. To resume recording, press II PAUSE. When the recording pause mode lasts for approximately 5 minutes, the VCR enters the stop mode.

When the cassette reaches its end

The cassette rewinds to the beginning and the power remains on.

Pausing



Technique 1

You can stop recording an unwanted scene and resume recording smoothly.

1 **Press II PAUSE when an unwanted scene appears.**
Recording will stop and the VCR enters the recording pause mode.

2 **Press II PAUSE at the desired point to release the pause mode.**
Recording resumes from the point set in step 1.

Technique 2

When an unwanted scene has already started recording, you can return the cassette to the desired point, have the VCR standby in the recording pause mode, and resume recording at the desired scene.

1 **Press II PAUSE to set the VCR to the recording pause mode.**

2 **Turn the DUAL MODE SHUTTLE ring on the VCR to the left to search for the point from which you wish to continue recording.**

3 **Release the DUAL MODE SHUTTLE ring on the VCR at the desired point.**
After an instant in still mode, the VCR automatically enters the recording pause mode.

4 **Press II PAUSE.**
Recording resumes.

Recording with the TV Off

Turn off the power of the TV or color monitor.
There will be no interference with the recording.

When using a cable box, make sure to leave the power for it set to on.

Watching One TV Program While Recording Another

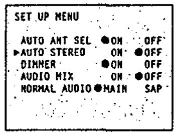
1 **Press TV/VTR so that the VTR indicator light goes off.**

2 **Select the channel you want to watch on the TV.**

VTR indicator	Picture on the TV Screen
Lights up	Channel selected by the VCR or the playback picture of the VCR
No indication	Channel selected by the TV

Recording Multi-Channel TV Sound (MTS)

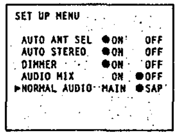
To record a stereo broadcast:
When a stereo broadcast program is received, the STEREO indicator lights up. The stereo program is automatically recorded in stereo. If a stereo program's reception is poor, set AUTO STEREO to "OFF" in the SET UP MENU. (See page 28.) The sound is heard in monaural but the noise is reduced.



```
SET UP MENU

 AUTO ANT SEL ●ON    OFF
▶AUTO STEREO   ON   ●OFF
 DIMMER       ●ON    OFF
 AUDIO MIX     ON   ●OFF
 NORMAL AUDIO●MAIN   SAP
```

To record SAP (Second Audio Program) broadcast:
Normally, set NORMAL AUDIO to "MAIN" in the SET UP MENU. The main sound is recorded on the normal track. To record the SAP sound on the normal audio track, set NORMAL AUDIO to "SAP" in the SET UP MENU.



```
SET UP MENU

 AUTO ANT SEL ●ON    OFF
 AUTO STEREO  ●ON    OFF
 DIMMER       ●ON    OFF
 AUDIO MIX     ON   ●OFF
▶NORMAL AUDIO MAIN  ●SAP
```

To monitor the SAP sound during recording, press AUDIO MONITOR to light the SAP indicator in the display window.

NOTES:
- When not recording an SAP broadcast, select "MAIN." If you select "SAP," no sound is recorded on the normal audio track.
- When the TV is connected only to the VHF/UHF OUT on the VCR, you cannot hear the program in stereo.
- In order to hear stereo playback, it is necessary to connect the L/R audio out connections of the VCR to a stereo monitor TV, or stereo audio system.

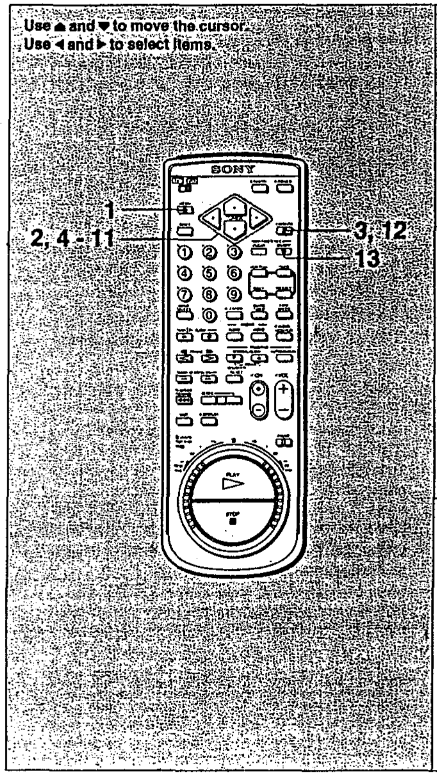
Timer Recording

The timer recording function lets you preset your VCR to record up to eight programs within a one-month period. You'll do this procedure from the TIMER SET/CHECK display on your TV.

As a First Step
Before setting the timer, make sure that:
- The time and date clock is set correctly. (See "Setting the Time and Date" on page 19.)
- The cassette is long enough to record all the programs.
- The cassette has a safety tab in place. If you insert a cassette with no safety tab and press TIMER REC (ON/OFF), the cassette automatically ejects from the VCR.
- The VCR and TV are both turned on.
- When you use a cable box, use Hookup 2 and set the CABLE BOX CONTROL (See "Setting the Cable Box Control" on page 25). Turn the cable box on.

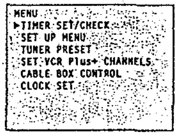
Setting the Timer

EXAMPLE: Here's how to record a program broadcast on channel 26 from 9:00 pm to 10:55 pm on Saturday, July 10 in EP mode:



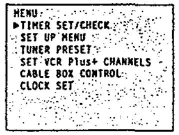
Use ▲ and ▼ to move the cursor.
Use ◀ and ▶ to select items.

1 **Press MENU.**
The main MENU appears.



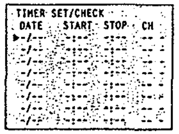
```
MENU
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

2 **Press ▲ or ▼ to move the cursor (▶) to TIMER SET/CHECK.**



```
MENU
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

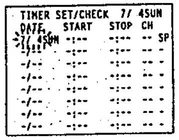
3 **Press EXECUTE.**
The TIMER SET/CHECK display appears on the screen. A short beep alerts you if the clock is not set properly. To reset the clock, refer to "Setting the Time and Date" (page 19).



```
TIMER SET/CHECK
 DATE   START  STOP  CH
▶--/--  --:--  --:-- --
 --/--  --:--  --:-- --
 --/--  --:--  --:-- --
 --/--  --:--  --:-- --
 --/--  --:--  --:-- --
 --/--  --:--  --:-- --
 --/--  --:--  --:-- --
 --/--  --:--  --:-- --
```

4 **Press ▶.**

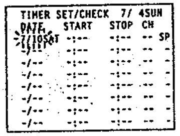
Make sure that today's date is flashing. If it isn't, reset the clock to the correct time. See "Setting the Time and Date" (page 19).



```
TIMER SET/CHECK  7/ 4SUN
DATE     START   STOP  CH
7/ 4SUN  -:--    -:--  -- SP
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
```

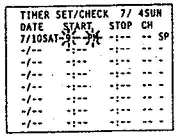
5 **Press ▲ to set the month and date to "7/10 SAT."**

The day of the week is automatically set.



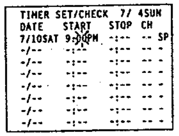
```
TIMER SET/CHECK  7/ 4SUN
DATE     START   STOP  CH
7/10SAT  -:--    -:--  -- SP
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
```

6 **Press ▶ to flash the hours position under "START," then ▲ or ▼ until "9:-- PM" appears.**



```
TIMER SET/CHECK  7/ 4SUN
DATE     START   STOP  CH
7/10SAT  9:--PM  -:--  -- SP
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
```

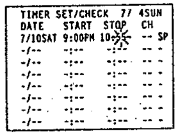
7 **Press ▶ to flash the minutes position under "START," then ▲ or ▼ until "00" appears.**



```
TIMER SET/CHECK  7/ 4SUN
DATE     START   STOP  CH
7/10SAT  9:00PM  -:--  -- SP
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
```

8 **Press ▶.**

The cursor blinks in the time field under "STOP." Set the time to finish recording, referring to steps 6 and 7.

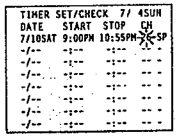


```
TIMER SET/CHECK  7/ 4SUN
DATE     START   STOP  CH
7/10SAT  9:00PM  10:   -- SP
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
```

9 **Press ▶ to flash the "CH" field, then press ▲ or ▼ until "26" appears.**

Only the channels set in the VCR will appear. You can also use the CHANNEL +/– or channel number buttons.

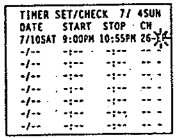
When using a cable box, the cable box channels appear under the CH section.



```
TIMER SET/CHECK  7/ 4SUN
DATE     START   STOP     CH
7/10SAT  9:00PM  10:55PM     SP
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
```

10 **Press ▶ to flash the recording speed position, then ▲ or ▼ or TAPE SPEED until "EP" appears.**

To change or correct a setting before entering it, press ◀ to return to the item you wish to change.

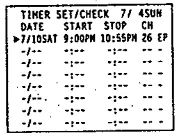


```
TIMER SET/CHECK  7/ 4SUN
DATE     START   STOP     CH
7/10SAT  9:00PM  10:55PM  26
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
```

11 **Press ▶ to store the setting.**

When all of the settings stop flashing and display a "▶" in the leftmost column, you've completed the setting.

To preset another program, move the cursor to the next line and repeat steps 4 to 11.



```
 TIMER SET/CHECK  7/ 4SUN
 DATE     START   STOP     CH
▶7/10SAT  9:00PM  10:55PM  26 EP
 -/--     -:--    -:--     -- -
 -/--     -:--    -:--     -- -
 -/--     -:--    -:--     -- -
 -/--     -:--    -:--     -- -
 -/--     -:--    -:--     -- -
 -/--     -:--    -:--     -- -
 -/--     -:--    -:--     -- -
```

12 **Press EXECUTE.**

The message "Please push TIMER REC to set timer" appears on the TV screen.

13 **Press TIMER REC (ON/OFF).**

The VCR enters the timer recording standby mode and the TIMER REC (recording) indicator lights up.

When using a cable box, make sure to leave it on.

To stop timer recording:

To stop timer recording while a program is being recorded, press TIMER REC (ON/OFF).

NOTES:

- To change or correct the setting before completing it, press ◀ to return to the item you wish to change.
- To record video sources from LINE IN 1 or 2 jacks, press INPUT SELECT in step 4 to 11 to move the screen cursor to LINE 1 or 2 in the "CH" position. This cursor returns to channel number on the third press.
- When CABLE BOX CONTROL is set to "ON," timer recording cannot be done through LINE IN.
- If you don't proceed for more than one minute, the VCR automatically exits from the TIMER SET/CHECK menu.

Daily/Weekly Recording

You can preset your VCR for daily or weekly recording. Daily recording records the same program every day of the week, while weekly recording records the same program on the same day every week. Follow steps 1 to 4 in "Setting the Timer" (pages 37 and 38).

Each time you press ▼, the indicator under the "DATE" column changes to one of these choices:

SUN—SAT (Every day of the week)
↓
MON—SAT (Every day except Sunday)
↓
MON—FRI (Every day except Saturday and Sunday)
↓
EVERY SAT
•
•
•
EVERY TUE
↓
EVERY MON
↓
EVERY SUN

The Timer Recording Standby Mode

When you return the VCR to the timer recording standby mode, you can record any previously preset programs. The VCR turns on automatically to record the first preset program. When it finishes recording, the power automatically shuts off.

To stop timer recording, press TIMER REC (ON/OFF).

Buttons Operable During Timer Recording

TIMER REC (ON/OFF)	To stop timer recording (See "Changing or Cancelling the Timer Settings," page 42.)
COUNTER RESET	(See "Indexing Tape Contents," page 31.)
TV/VTR	(See "Watching One TV Program While Recording Another," page 36.)
DISPLAY	(See "The Display," page 31.)
MENU	For checking the programs only (See "Checking the Timer Settings," page 41.)

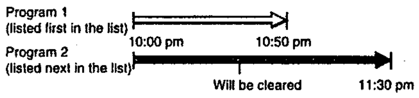
NOTE:
If a power interruption occurs during timer recording, recording will stop and your VCR will turn off. If power is restored within three hours, and it's before the recording end time, recording will start again from that point. If the interruption lasts for more than three hours, any presettings will be erased and you'll need to reset the time and date for your programs. Note that the tape counter will return to "0H00M00S."

Overlapping Timer Recordings

Case 1

If you preset two programs to record at the same time . . .

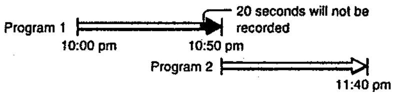
The program listed first on the TIMER SET/CHECK display has priority over the other programs. The timer settings for lower priority programs will be deleted from the TIMER SET/CHECK display when recording begins for the first program.


Program 1
(listed first in the list)
10:00 pm
10:50 pm
Program 2
(listed next in the list)
Will be cleared
11:30 pm

Case 2

If you set program 2 to record at the same time you set program 1 to finish recording . . .

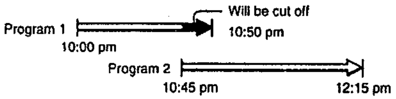
The last 20 seconds of program 1 will not be recorded.


Program 1
10:00 pm
20 seconds will not be recorded
10:50 pm
Program 2
11:40 pm

Case 3

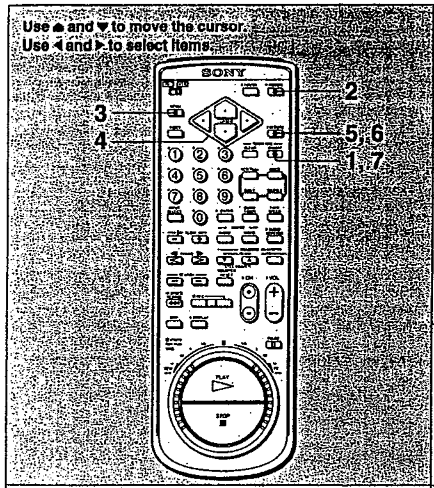
If you set program 2 to record before program 1 has finished recording . . .

Program 2 will begin recording before program 1 has finished.


Program 1
10:00 pm
Will be cut off
10:50 pm
Program 2
10:45 pm
12:15 pm

Checking the Timer Settings

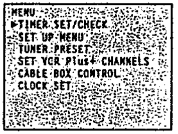
Here's how to display your timer settings to confirm the programs you wish to record.


Use ▲ and ▼ to move the cursor.
Use ◀ and ▶ to select items.
SONY
3
4
2
5, 6
1, 7

1 **Press TIMER REC (ON/OFF).**
The TIMER REC (recording) indicator on the VCR turns off.

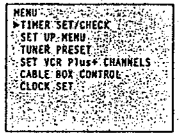
2 **Press POWER.**

3 **Press MENU.**
The main MENU appears.



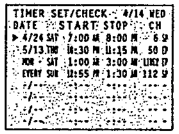
```
MENU
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

4 **Press ▲ or ▼ to move the cursor (▶) to TIMER SET/CHECK.**



```
MENU
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

5 **Press EXECUTE.**
The TIMER SET/CHECK display appears.



```
TIMER SET/CHECK   4/14 WED
DATE     START   STOP    CH
▶ 4/24 SAT  7:00 AM  8:00 PM    6 SP
  5/13 THU 10:30 PM 11:15 PM   50 EP
  MON - SAT  1:00 AM  3:00 AM LINE2 EP
  EVERY SUN 11:55 PM  1:30 AM  112 SP
  -/--  --:--  --:--  ---
  -/--  --:--  --:--  ---
  -/--  --:--  --:--  ---
  -/--  --:--  --:--  ---
```

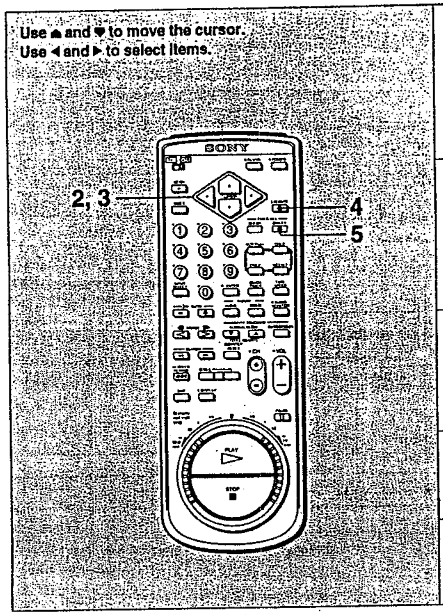
6 **Press EXECUTE to return to the original screen.**

7 **Press TIMER REC (ON/OFF).**
The VCR returns to the timer recording standby mode. Leave the cable box on.

NOTES:
- If you set a program to record only one time, that setting is erased from the TIMER SET/CHECK display when the recording has finished.
- To check the timer settings during timer recording, follow steps 3 to 6 above.

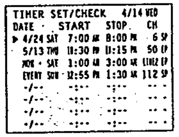
Changing or Cancelling the Timer Settings

Here's how to change or cancel any timer settings from the TIMER SET/CHECK display:



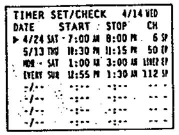
Use ▲ and ▼ to move the cursor.
Use ◀ and ▶ to select items.

1 **Display the TIMER SET/CHECK menu on the TV screen by following the procedures outlined in "Checking the Timer Settings" on page 41.**



```
TIMER SET/CHECK    4/14 WED
DATE      START    STOP    CH
▶ 4/24 SAT  7:00 AM  8:00 PM    6 SP
  5/13 THU 10:30 PM 11:15 PM   50 LP
  MON - SAT  1:00 AM  3:00 AM LINE2 EP
  EVERY SUN 12:55 PM  1:30 AM  112 SP
  -/--      --:--    --:--     -- -
  -/--      --:--    --:--     -- -
  -/--      --:--    --:--     -- -
  -/--      --:--    --:--     -- -
```

2 **Press ▲ or ▼ to move the cursor (▶) to the program you wish to change or cancel.**



```
TIMER SET/CHECK    4/14 WED
DATE      START    STOP    CH
▶ 4/24 SAT  7:00 AM  8:00 PM    6 SP
  5/13 THU 10:30 PM 11:15 PM   50 LP
  MON - SAT  1:00 AM  3:00 AM LINE2 EP
  EVERY SUN 12:55 PM  1:30 AM  112 SP
  -/--      --:--    --:--     -- -
  -/--      --:--    --:--     -- -
  -/--      --:--    --:--     -- -
  -/--      --:--    --:--     -- -
```

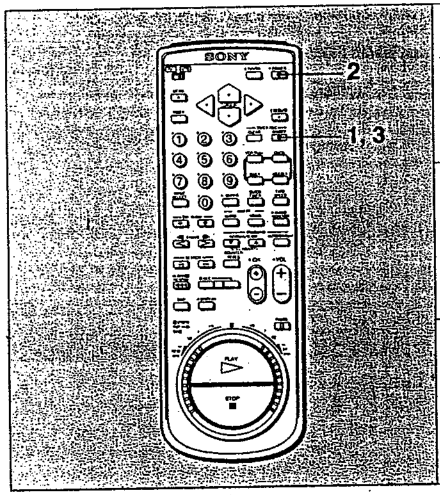
3 **To change a program, select the item to be changed by pressing ◀ or ▶, then make changes by pressing ▲ or ▼.**
To cancel it, press TIMER CLEAR.
Repeat this step to change or cancel other settings.

4 **Press EXECUTE.**
This stores the changes and returns you to the original screen.

5 **Press TIMER REC (ON/OFF).**
This returns you to the timer recording standby mode.
Leave the cable box on.

Using the VCR Before Timer Recording Starts

If you want to use your VCR while it's in the timer recording standby mode, you must first turn off the TIMER REC (recording) indicator on the VCR. Here's how:



1 **Press TIMER REC (ON/OFF).**
The TIMER REC (recording) indicator on the VCR turns off and the VCR leaves the timer recording standby mode.

2 **Press POWER.**
The VCR is ready for use.

3 **After using the VCR, press TIMER REC (ON/OFF).**
The VCR returns to the timer recording standby mode and the TIMER REC (recording) indicator lights up.
Leave the cable box on.

Introducing VCR Plus+

VCR Plus+ is a feature used in Sony VCRs that simplifies the task of programming your VCR to make unattended recordings. Here's how it works:

Whenever you want to record a TV program, all you need to do is to look up the program's "PlusCode," a number assigned to each program that's published in the TV section of most newspapers, cable TV listings, and even *TV Guide* magazine.

PlusCode

5:30 14 MOVIE — Musical (2hrs.) 33044
2 SPORTS — Golf (1hr. 25min.) 42060
CNN —WS 9974

6:30 2 3 4 DRAMA — Comedy (2hrs.) 17390
5 SCIENCE AND TECHNOLOGY
(1hr. 15min.) 73457

Then, just enter the number of the program you want—using the Remote Commander—and the VCR is automatically programmed to record that show. It's that simple. With VCR Plus+, you no longer have to go through a lengthy and often repetitive procedure when you set start and stop times, channel numbers, and dates. All this information is automatically sent to your VCR when you enter the program's PlusCode!

Of course, there's some setup you'll need to do before you use VCR Plus+ for the first time. But after this initial setup, just think of how much easier it'll be to record your favorite TV programs, cable movies, and sporting events—all with the touch of a few buttons. VCR Plus+ makes programming your VCR easier than ever!

NOTE:
If PlusCodes aren't yet available in your area, they'll probably be introduced soon. Check with your local newspaper for details.

VCR Plus+ Setup Instructions

Setting up your VCR to use VCR Plus+ involves coordinating the TV channel number (the number you turn to on your TV or VCR to watch a program) with the guide channel (the number that's assigned to that channel in your program guide).

If you don't have cable TV (i.e., if your TV receives its signal from an antenna only), the TV channel number and the guide channel number will probably be the same, in which case you'll only have to check that the two numbers match. For numbers that don't match, you must first perform the procedures that follow to get these channel numbers synchronized with each other.

To get the guide channel numbers, find the Channel Line-Up Chart in the program guide for your area that features VCR PlusCodes. It usually looks like the example to the right.

If you have cable TV, you should then get the TV channel numbers for each channel from your cable company. (You may already know them.) Then **for channel numbers that are different**, enter the program guide channels (from the Program Guide), on the left, and the actual TV channels (from your cable system), on the right, as shown on page 45.

Example of "Channel Line-Up Chart"

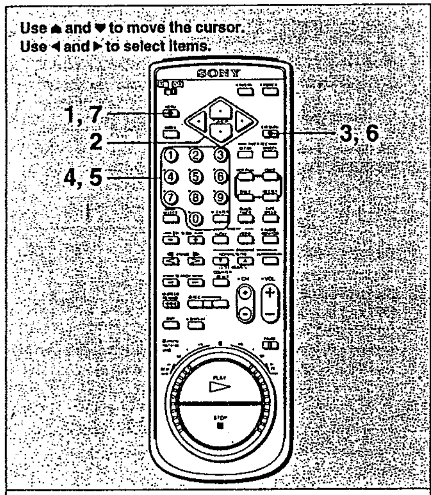
	CABLE TV	Guide channel number
A&E	Arts & Entertainment Network	39
AMC	American Movie Classics	35
BRV	Bravo (program grid only)	54
CNN	Cable News Network	42
CSP	C-SPAN	28
DIS	The Disney Channel	53
DSC	The Discovery Channel	37
ESN	ESPN	34
FAM	The Family Channel	47
HBO	Home Box Office	33
LIF	Lifetime	46
MAX	Cinemax	45
MSG	Madison Square Gardens Network	19
MTV	Music Television	48
NIK	Nickelodeon	38
SC	Sports Channel	59
SCA	Sports Channel America	70
SHO	Showtime	41
TBS	TBS SuperStation	43
TMC	The Movie Channel	58
TNN	The Nashville Network	49
TNT	Turner Network News	52
USA	USA Network	44

SAMPLE

For each channel your VCR receives, use the Channel Line-Up Chart to check that the channel numbers match. For example, if HBO is listed in the Channel Line-Up Chart on channel 33, and your VCR receives HBO on channel 15, you need to coordinate these numbers using the following procedures. For channels in which the numbers are the same (for example, if your VCR receives HBO on channel 33, and the guide channel number is 33), you can skip these procedures.

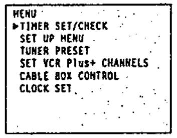
Example:

Guide Channel (from "Channel Line-Up Chart" in your program guide)	TV Channel (channel you actually use on you VCR)
33 (Home Box Office)	15


Use ▲ and ▼ to move the cursor.
Use ◀ and ▶ to select items.

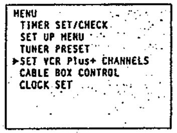
1 **Press MENU.**

The main MENU appears.



```
MENU
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

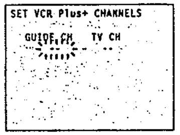
2 **Press ▼ or ▲ to move the cursor (▶) to SET VCR Plus+ CHANNELS.**



```
MENU
 TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
▶SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

3 **Press EXECUTE.**

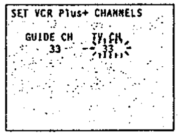
The SET VCR Plus+ CHANNELS menu appears.
The "GUIDE CH" field blinks.



```
SET VCR Plus+ CHANNELS
  GUIDE CH    TV CH
```

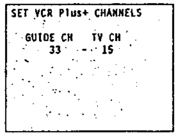
4 **In the "GUIDE CH" field, enter 33 (the number assigned to this channel in the Channel Line-Up Chart) and press ENTER.**

The "TV CH" field blinks.



```
SET VCR Plus+ CHANNELS
  GUIDE CH    TV CH
    33    -    33
```

5 **In the "TV CH" field, enter 15 (the number to which you tune your VCR to watch this channel) and press ENTER.**

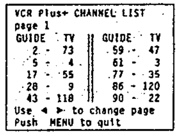


```
SET VCR Plus+ CHANNELS
  GUIDE CH    TV CH
    33    -    15
```

NOTE:
"The TV Channel setting will be different whether you use cable TV or not. Please refer to "Preparation" on page 6.

6 **For each channel in which the TV channel differs from the guide number, repeat steps 4 and 5, using the menus that are displayed.**

To check your channel settings, press EXECUTE.



```
VCR Plus+ CHANNEL LIST
page 1
GUIDE   TV  || GUIDE   TV
  2  -  73  ||  59  -  47
  5  -   4  ||  61  -   3
 17  -  55  ||  77  -  35
 28  -   9  ||  86  - 120
 43  - 118  ||  90  -  22
Use ◀ ▶ to change page
Push  MENU to quit
```

7 **When you've finished, press MENU to exit.**

Recording Programs Using VCR Plus+

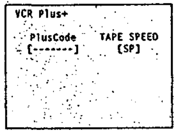
To use VCR Plus+ to record programs, all you need is the program's PlusCode, which you'll find in the program listings in your local newspaper, cable TV guide, or *TV Guide magazine*.
For example, to record the following program, just use the following procedures:

PlusCode

EXAMPLE: 13 MOVIE---Comedy (2hrs.) 53292

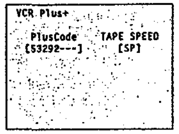
NOTE:
- You can set the program without opening the VCR Plus+ menu. Refer to the display window on the VCR.
- When you use a cable box, use Hookup 2 and set the CABLE BOX CONTROL (See "Setting the Cable Box Control" on page 25). Turn the cable box on.

1 Press VCR Plus+.
The VCR Plus+ TIMER SET menu appears.



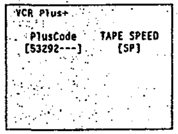
```
VCR Plus+
PlusCode      TAPE SPEED
[-------]        [SP]
```

2 Enter 53292 (the program's PlusCode) in the PlusCode field.
If you make a mistake, press TIMER CLEAR and enter the PlusCode again.



```
VCR Plus+
PlusCode      TAPE SPEED
[53292---]       [SP]
```

3 To select the cassette's recording speed (SP or EP), press TAPE SPEED.
Unless you change the cassette speed, SP is used.
See "Maximum recording time of a cassette" on page 29 for information about cassette speeds.



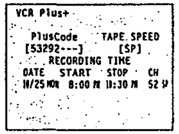
```
VCR Plus+
PlusCode      TAPE SPEED
[53292---]       [SP]
```

4 Press ONCE, DAILY, or WEEKLY on the Remote Commander.

See the following chart for details of these options.

ONCE: Records scheduled programs one time only.
WEEKLY: Records every week at the same scheduled time.
DAILY M-F: Records Monday to Friday at the same scheduled time.

The VCR Plus+ menu displays the recording information: date, program start and stop times, channel number, and tape speed.
If you make a mistake, press TIMER CLEAR, and start from the beginning.



```
VCR Plus+
  PlusCode      TAPE.SPEED
 [53292---]        [SP]
        RECORDING TIME
 DATE    START    STOP    CH
 10/25 MON 8:00 PM 10:30 PM 52
```

5 If you want to set another program, repeat steps 1 to 4.

6 Insert a cassette into your VCR.

7 Press TIMER REC (ON/OFF) to set the VCR's recording timer.
The VCR enters the timer recording standby mode.
Your VCR is now set up to record the programs you've selected. The VCR will turn on automatically, record the program, and then turn off until the next programmed show is ready for broadcast.
For checking, changing, and cancelling the settings, see pages 41 and 42.
Leave the cable box on.

NOTES:
You can't set the timer using PlusCodes in the following cases:
- When the VCR is turned off
- While the VCR is in the timer-recording or quick-timer recording mode
- When the VCR is in the timer-recording standby mode

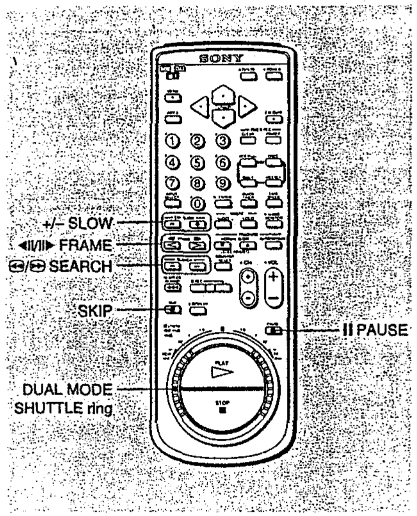
The timer will not accept settings in the following cases:
- When you select DAILY for a Saturday and Sunday program
- When you select WEEKLY or DAILY for a program more than seven days ahead. (The WEEKLY and DAILY settings only work for the current week.)
- When you enter the PlusCode of a program that has already ended

Variable Speed Playback

The following section explains the advanced playback functions you can do with your VCR.

Variable Speed Playback

Using the DUAL MODE SHUTTLE ring on your VCR or Remote Commander, you can play cassettes at a variety of forward and reverse speeds. You can also freeze a picture using the pause function.



Still Picture

When playing back a cassette, press II PAUSE to hold the picture in one place. To resume normal playback, press either ▶ PLAY or II PAUSE. If you leave your VCR in the pause mode, normal playback resumes after approximately 5 minutes.

Picture Search

By turning the DUAL MODE SHUTTLE ring either clockwise for forward viewing or counterclockwise for viewing in reverse, you can control the cassette playback speed.

- **Picture Search During Playback or Pause Modes**

While playing or pausing a cassette, turn the DUAL MODE SHUTTLE ring until one of the double arrow indicators ◀◀ (left side) or ▶▶ (right side) lights up.
A high-speed picture without sound displays on the screen until you release the ring.

When you release the DUAL MODE SHUTTLE ring, it returns to its original position.
If you release the ring while in the pause mode, the picture returns to pause. If you release it during playback, the picture returns to playback.

NOTE:
If you quick search a cassette recorded in the LP cassette speed, your picture may change to black and white, depending on the TV you're using.

- **Picture Search While Fast-Forwarding or Rewinding a Cassette**

When fast-forwarding or rewinding a cassette, turn the DUAL MODE SHUTTLE ring to preview a high-speed picture (clockwise for forward viewing or counterclockwise for reverse viewing).

When you release the ring, it returns to its original position and the VCR continues fast-forwarding or rewinding.

Locked Picture Search

This feature lets you lock in and view a high-speed picture while playing or pausing a cassette. In the play or pause mode, press ⊖ SEARCH (reverse) or ⊕ SEARCH (forward) on the Remote Commander.
To resume normal playback, press ▶ PLAY.

Skip Playback

While playing a cassette, press SKIP on the Remote Commander.
This feature lets you view your cassette at high speed for about 30 seconds before resuming normal playback.

Slow Motion Playback

During playback or playback pause mode, press I▶ SLOW + or – on the Remote Commander. Change the slow motion speed with the + or – buttons.
Press + to increase the playback speed, and – to decrease the playback speed.
You can also use the ◀II FRAME (reverse) and FRAME II▶ (forward) buttons to change direction during slow-motion playback.

Frame-by-Frame Picture

During the playback pause mode, press FRAME II▶ > to advance the picture one frame or ◀II < FRAME to reverse the picture one frame.
Each time you press the button, the picture moves one frame. To resume normal playback, press ▶ PLAY.

Picture Adjustment During Variable Speed Playback

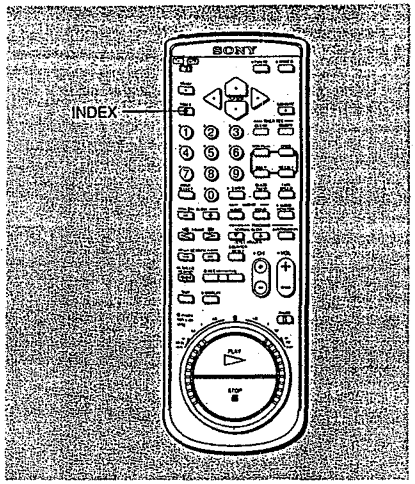
If a picture played in slow motion displays streaks, adjust the picture with the TRACKING NORMAL/SLOW and STILL ADJUST ▼/▲ buttons on the Remote Commander. You can adjust the picture more easily by changing the speed closer to normal playback by pressing I▶ SLOW +.
If the picture appears to shake in the still mode, adjust it using the STILL ADJUST ▼/▲ buttons on the Remote Commander until the picture stabilizes.
When pausing a cassette, you may notice a band at the top or bottom of the screen. Adjust the picture by playing back the cassette in slow motion and using the TRACKING NORMAL/SLOW and STILL ADJUST ▼/▲ buttons on the Remote Commander.

NOTE:
Some streaks and/or snow are unavoidable when playing back a cassette in the reverse or reverse slow modes.

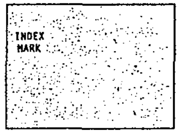
Index Function

You can find specific locations on a cassette using your VCR's index function.

Index Signals

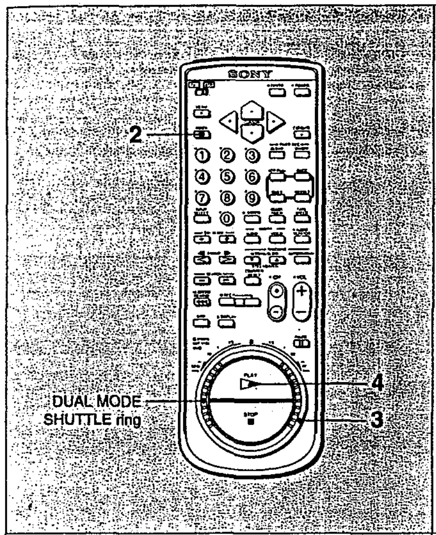


The VCR automatically inserts index signals each time you use the recording, timer recording or quick-timer recording functions (index mark). When an index mark is made, INDEX MARK appears on the TV screen. The index works as a divider between scenes, and is not numbers. So, when you specify the index mark later, you have to specify the relative position from the current position (the first index, the second index... from the current position). When going from the recording pause mode to the recording mode, an index is not inserted.



Playing Back from the Index Point — Index Scan

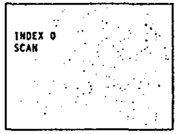
Here's how to find and play a program you've marked with an index signal:



1 **Insert an indexed cassette into your VCR.**

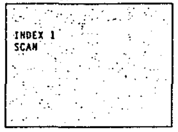
2 **Press INDEX once.**
The INDEX SCAN indicator appears on the TV screen.

TV screen



3 **Turn the DUAL MODE SHUTTLE ring clockwise to find the next program, or counter clockwise to find the previous program.**
The index scan locates the next marked index signal and plays about 10 seconds of tape prior to the signal. The VCR then rewinds or advances to the next index signal. Every time the VCR finds an index signal, playback begins and the displayed index number increases.

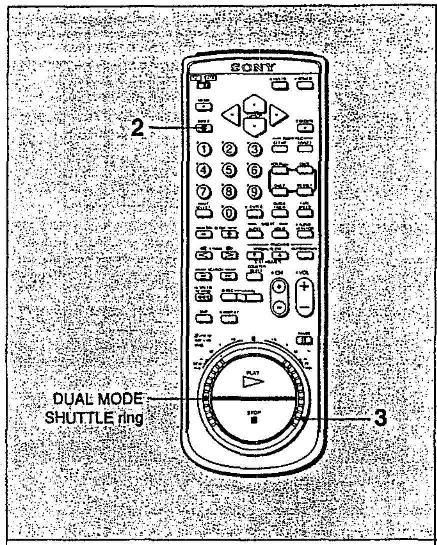
TV screen



4 **When you find the program you want, press ► PLAY.**
Playback starts from that point.

Locating an Index — Index Search

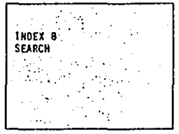
Locate an index by indicating how many index signals ahead or behind that program is from the cassette's current position. Here's how:



1 Insert an indexed cassette into your VCR.

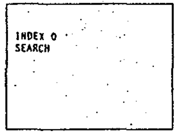
2 Press INDEX until the index number for the desired program appears on your TV screen.
The VCR exits from the index mode, if you pass index number 19.

TV screen



3 Turn the DUAL MODE SHUTTLE ring clockwise to locate an upcoming index signal or counterclockwise for a prior index signal.
The cassette rewinds or advances to the next index. Each time an index signal is detected, the index number decreases. When the number reaches 0, your VCR will begin to play.

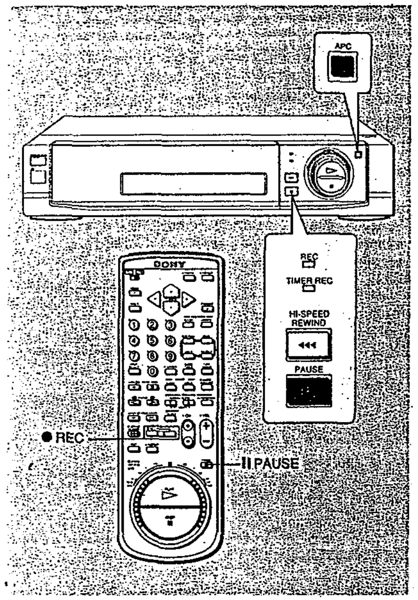
TV screen



APC (Adaptive Picture Control)

This function automatically improves recording and playback quality by adjusting the VCR for the condition of the video heads and video tape. To maintain better picture quality, we recommend that you leave the function on. (The APC button/indicator remains lit.)

Using the APC Function when Recording



Before you start recording, make sure the APC button/indicator is lit. If it is not, press the APC button/indicator so that it lights up.
The light flashes rapidly while the tape is being measured. The complete measurement is retained until the cassette is ejected. If you use that same tape again without ejecting it, the tape is not measured again.

When you are in the recording pause mode and the APC button/indicator flashes slowly
The APC function does not operate if you press II PAUSE to release the pause mode.
To use the APC function when the indicator flashes slowly, press ● REC. After measurement is completed, the VCR returns to the recording pause mode. Press II PAUSE to start recording.

When you are using timer recording
When you want to use the APC function during timer recording, press the APC button/indicator so that it lights up, then press the TIMER REC button.

Using the APC Function when Playing Back a Tape

When the APC button/indicator is on, the APC function automatically works on all types of tapes, including rental tapes. You can play back a tape using the APC function even if the tape was not recorded with it.

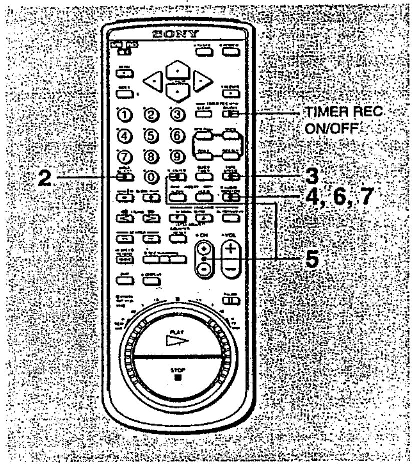
Notes:
- Tapes recorded using the APC function are played back normally on VCRs that do not have the APC function.
- If you have the PICTURE switch on the VCR set to EDIT, the APC function does not operate when playing back a tape but does operate when recording.
- When doing audio/video insert editing, turn off the APC function as the timing of the insert may be incorrect when the function is on.
- To ensure accurate timing during synchronized editing, use the APC function on the recording VCR (this VCR), as the timing of the recording will not be accurate when using the APC function on the playback VCR.

Quick-Timer Recording

This function allows you to preset your VCR to record for a specified amount of time from now, without having to set the recording start time.

NOTE:
- Before you begin, make sure the clock has been set, then ensure that the timer recording function is turned off by checking the TIMER REC (recording) indicator. If the indicator is lit, press TIMER REC ON/OFF to turn it off.
- When you use a Cable Box, use Hookup 2 and set the CABLE BOX CONTROL (See "Setting the Cable Box Control" on page 25). Turn the cable box on.

Quick-Timer Recording



If you're currently recording, skip to step 7.

1 **Insert a cassette into your VCR.**

2 **Press INPUT SELECT to select the input you want, which will then light up in the display window.**

3 **Select the desired recording speed (SP or EP) by pressing TAPE SPEED.**

4 **Press QUICK TIMER.**
If you insert a cassette without its safety tab, your VCR will eject the cassette.

5 **When you want to record a TV program, select the channel you wish to record using the CH +/– or channel number buttons. Press ENTER while the channel display flashes.**

6 **Press QUICK TIMER again to start recording.**

7 **Select the recording duration by pressing QUICK TIMER to change the duration indicator in the display window. Each time you press QUICK TIMER, the recording duration increases by 30 minutes.**

$$0{:}00 \longrightarrow 0{:}30 \longrightarrow 1{:}00 \cdots\cdots 9{:}00$$

To stop quick-timer recording
To stop quick-timer recording while a program is being recorded, press TIMER REC ON/OFF.

Buttons Operable During Quick-Timer Recording

TIMER REC (ON/OFF)	To stop quick-timer recording
QUICK-TIMER	To change recording duration
COUNTER RESET	To reset the counter to zero
TV/VTR	To watch the picture broadcast on another channel (TV)
MENU	Only operable to check the timer recording settings. (See "Checking the Timer Settings," on page 41.)

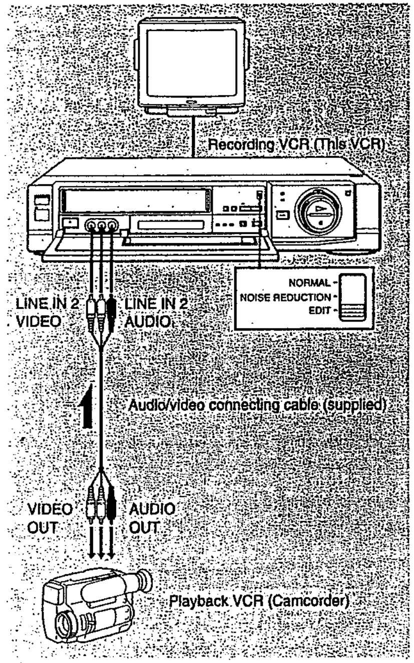
NOTES:
- If your cassette ends during quick-timer recording, recording stops and the VCR turns off. The cassette will not rewind automatically.
- If a power interruption occurs during quick-timer recording, recording will stop and your VCR will turn off. If the interruption lasts less than three hours and the power is restored before the recording end time, recording will start again from that point.

Editing

Using an additional VCR, you can record programs from one VCR to the other. Here's how:

Editing from Another VCR

Here's how to edit from another VCR (such as an 8mm video camera recorder for playback) when using this VCR for recording.



Before you start:
- Select LINE 1 or LINE 2 with INPUT SELECT, whichever the playback VCR is connected to.
- Select SP or EP with TAPE SPEED.
- Select the EDIT position on the PICTURE switch.

NOTE:
If your playback VCR has an editing function, select it to reduce static and improve reception.

How to edit:

1 **Insert a blank cassette into the recording VCR with a safety tab in place.**

2 **Turn on the playback VCR and insert a source cassette.**

3 **Locate the playback start point and select the playback pause mode on the playback VCR.**

4 **Locate the recording start point and select the recording pause mode on the recording VCR.**

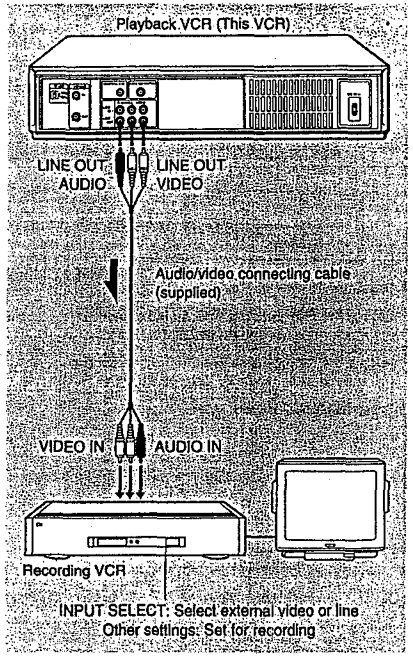
5 **Press II PAUSE on both VCRs.**

For best results, press II PAUSE on the playback VCR just before pressing II PAUSE on the recording VCR.
When you've finished editing, press ■ STOP on both VCRs.
When you release the recording pause mode, the APC function may not operate.
For details, see page 53.

NOTES:
- If your playback VCR is a stereo unit, make connections with the supplied audio/video connecting cable.
- If your playback VCR is a monaural unit, connect the white plug to LINE IN 2 AUDIO L on this VCR. This lets you record the sound of the playback VCR on both channels of this VCR. Do not connect the white plug to LINE IN 2 AUDIO R.
- When connecting the VCRs, do not connect both LINE IN and LINE OUT jacks on your VCRs simultaneously. Doing so may cause a humming noise.
- Tapes recorded using the APC function are played back normally on VCRs that do not have the APC function.
- If you have the PICTURE switch on the VCR set to EDIT, the APC function does not operate when playing back a tape but does operate when recording. When you are editing tapes (dubbing) using this unit as either the recording VCR or the playback VCR, use the EDIT setting.

Editing onto Another VCR

Here's how to use this VCR as the playback VCR and another VCR as the recording VCR.


Playback VCR (This VCR)
LINE OUT AUDIO
LINE OUT VIDEO
Audio/video connecting cable (supplied)
VIDEO IN
AUDIO IN
Recording VCR
INPUT SELECT: Select external video or line
Other settings: Set for recording

Before you start:

- **Select the EDIT position on the PICTURE switch.** If your recording VCR has an editing function, it should also be selected to improve reception.
- **Press DISPLAY to TURN OFF the display.**

How to edit:

1 **Turn on the recording VCR and insert a blank cassette with a safety tab in place.**

2 **Insert a source cassette into the playback VCR.**

3 **Locate the playback start point and select the playback pause mode on the playback VCR.**

4 **Locate the recording start point and select the recording pause mode on the recording VCR.**

5 **Press II PAUSE on both VCRs.**
For best results, press II PAUSE on the playback VCR just before pressing II PAUSE on the recording VCR. When you've finished editing, press ■ STOP on both VCRs.

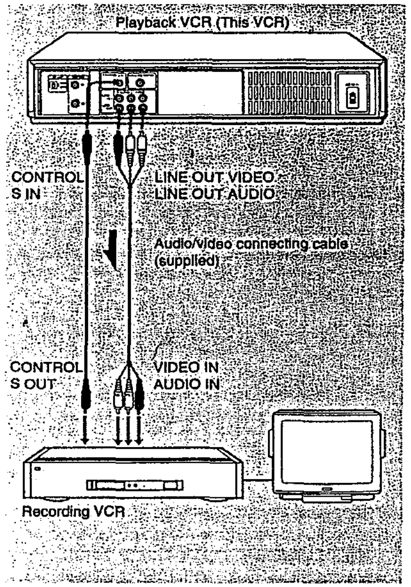
NOTES:

- If your recording VCR is a stereo unit, make connections with the supplied audio/video connecting cable.
- If your recording VCR is a monaural unit, make connections using the VMC-910MS/920MS cable (not supplied).
- When connecting the VCRs, do not connect both LINE IN and LINE OUT jacks on your VCRs simultaneously. Doing so may cause a humming noise.
- Tapes recorded using the APC function are played back normally on VCRs that do not have the APC function.
- If you have the PICTURE switch on the VCR set to EDIT, the APC function does not operate when playing back a tape but does operate when recording. When you are editing tapes (dubbing) using this unit as either the recording VCR or the playback VCR, use the EDIT setting.

Synchronized Editing onto Another VCR

Synchronized editing is the process of recording and editing a program from either a video camera recorder or a VCR to another VCR. Because this editing function involves one VCR controlling another VCR or video camera recorder, it is said to be "synchronized".

The following illustration shows you how to use this VCR for playback and either a Sony VHS VCR or certain 8mm VCRs having a Control S OUT terminal and synchro edit function for recording.


Playback VCR (This VCR)
CONTROL S IN
LINE OUT VIDEO
LINE OUT AUDIO
Audio/video connecting cable (supplied)
CONTROL S OUT
VIDEO IN
AUDIO IN
Recording VCR

Before you start:

- Select external video or LINE on recording VCR.
- Make necessary settings for recording.
- Select the EDIT position on the PICTURE switch.

How to edit:

1 **Turn on the recording VCR and insert a blank cassette.**

2 **Insert a source cassette into the playback VCR.**

3 **Locate the edit start point and select the recording pause mode on the recording VCR.**

4 **Locate the playback start point and select the playback pause mode on the playback VCR.**

5 **Press SYNCHRO EDIT on the recording VCR.**
Both recording and playback will start.

6 **At the desired edit end point, press SYNCHRO EDIT on the recording VCR.**
The recording VCR enters the recording pause mode and the playback VCR enters the playback pause mode.

7 **To edit the next scene, repeat steps 4, 5, and 6.**
When you've finished editing, press ■ STOP on both VCRs.

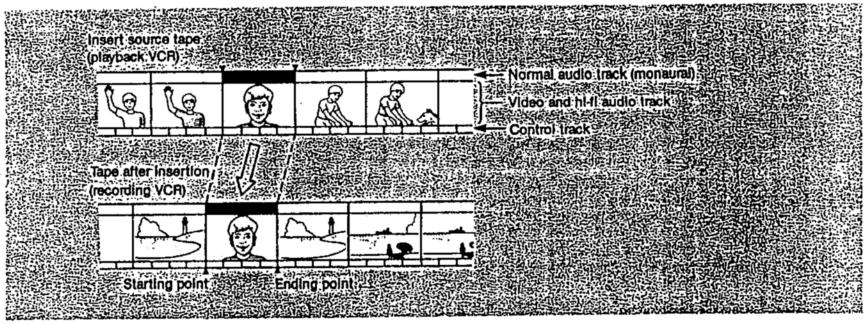
NOTES:

- If your recording VCR is a monaural unit, make connections using the VMC-910MS/920MS cable (not supplied).
- When connecting the VCRs, do not connect both LINE IN and LINE OUT jacks on your VCRs simultaneously. Doing so may cause a humming noise.

Insert Editing

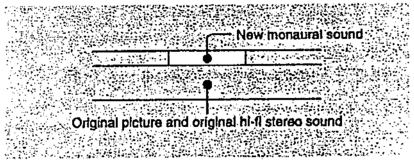
When you want to replace one prerecorded scene (and its sound) with another, you can use your SLV-900HF's insert editing function. This function lets you make either audio inserts, video inserts, or both audio and video inserts.

How the Insert Editing Function Works


Insert source tape
(playback VCR)
Normal audio track (monaural)
Video and hi-fi audio track
Control track
Tape after insertion
(recording VCR)
Starting point
Ending point

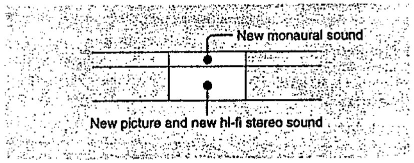
Audio Insert

You can insert a monaural soundtrack onto a prerecorded cassette. The picture and hi-fi stereo sound of the video and hi-fi audio track are retained.


New monaural sound
Original picture and original hi-fi stereo sound

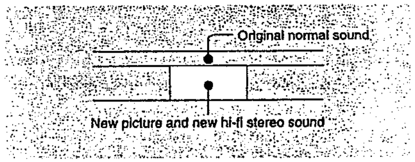
Audio and Video Insert

You can insert a new picture, hi-fi stereo sound, and a new monaural sound onto a prerecorded cassette.


New monaural sound
New picture and new hi-fi stereo sound

Video Insert

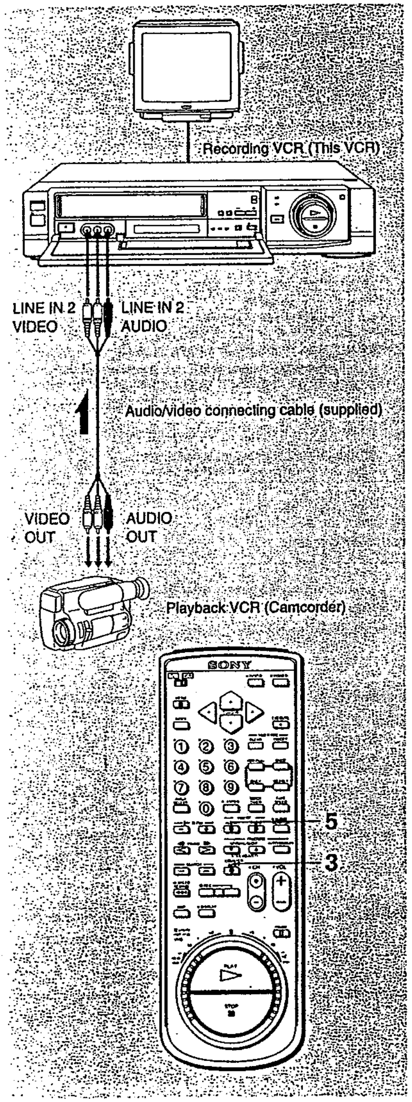
You can insert a new picture and hi-fi stereo sound from a video and hi-fi audio track onto a prerecorded cassette. Note that the original audio track is retained.


Original normal sound
New picture and new hi-fi stereo sound

Insert Indicators and On-screen Display

Insert	Indicator	On-screen Display
Audio	INSERT AUDIO lights up	A INS
Video	INSERT VIDEO lights up	V INS
Audio/ video	INSERT AUDIO/VIDEO lights up	A V INS

Insert Editing from another VCR


Recording VCR (This VCR)
LINE IN 2 VIDEO
LINE IN 2 AUDIO
Audio/video connecting cable (supplied)
VIDEO OUT
AUDIO OUT
Playback VCR (Camcorder)
SONY
5
3

Before you start:

- For connection, see pages 55 through 56. (The CONTROL S connections are not needed.)
- Select the insert source from the equipment connected to LINE IN 1 or 2.
- Connect the VCR to an audio system for "audio insert."
- Select the EDIT position on the PICTURE switch.

How to edit:

1 **Insert a source cassette into the playback VCR and a cassette for recording into this VCR.**

2 **On the recording VCR locate the edit end point, then press II PAUSE on this VCR.**

3 **Press COUNTER RESET on the recording VCR.**

4 **On the recording VCR, rewind the cassette to locate the starting point and set the VCR to the playback pause mode.**
The DUAL MODE SHUTTLE ring is useful for locating a desired starting point.

5 **Press INSERT AUDIO VIDEO.**
For audio insert, press AUDIO. The INSERT AUDIO indicator lights up on the VCR.
For video insert, press VIDEO. The INSERT VIDEO indicator lights up on the VCR
For audio and video insert, press the AUDIO INSERT and then press VIDEO INSERT. Both the INSERT AUDIO and INSERT VIDEO indicators light up on the VCR.

6 **On the playback VCR, locate the starting point where you want to start the insertion and set the VCR to the playback pause mode.**

7 **Press II PAUSE on both VCRs to start the insertion.**
At the ending point (0H00M00S), the insertion stops automatically. (To stop playback, press ■ STOP.)

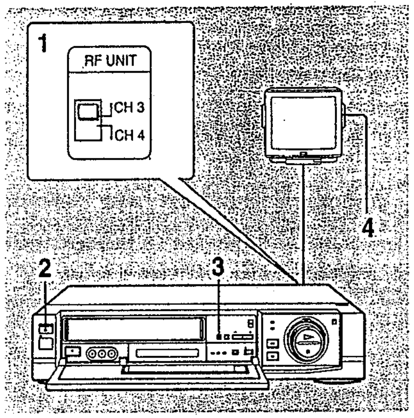
To stop the insertion temporarily:
Press II PAUSE.

To stop ongoing insertion:
Press ■ STOP

NOTES:
- Audio/video inserts cannot be made onto an unrecorded portion of a cassette.
- After the insertion, the previous picture and/or sound will be erased.

General Setup Information

Setting the RF UNIT



Why this setting is necessary:

You must set the RF UNIT selector at the rear of the VCR properly so that your TV can receive the correct signal from the VCR. Set the selector to CH 3 (channel 3) or CH 4 (channel 4), whichever is not active in your area.

If you connect a TV or color monitor equipped with A/V input jacks, skip this step.

1 **Set the RF UNIT at the rear of the VCR to CH 3 or CH 4, whichever is not active in your area.**

2 **Press POWER.**
The power indicator lights up on the VCR.

3 **Press TV/VTR.**
The VTR indicator lights up in the display window.

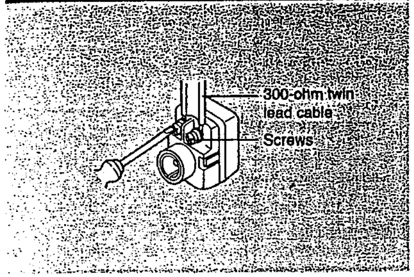
4 **Select an active channel in your area by pressing CHANNEL +/–.**

5 **Turn on your TV and set it to the channel you selected in step 1.**

Your TV is now tuned to the VCR. Whenever you use the VCR, set the TV to the preselected channel.

NOTE:
For details on adjusting TV channels, see your TV instruction manual.

Attaching the External Antenna Connector (supplied)

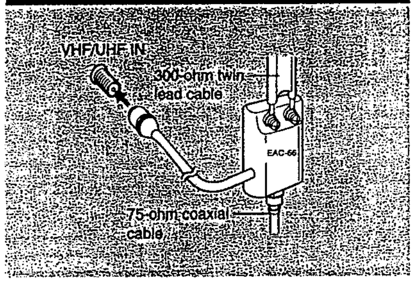


1 **Loosen the screws on the antenna connector.**

2 **Fit the 300-ohm twin lead cable on the UHF antenna under the screws on the antenna connector.**

3 **Retighten the screws.**

Attaching the EAC66 U/V Band Separator/Mixer (not supplied)



1 **Loosen the screws on the U/V band separator/mixer.**

2 **Fit the 300-ohm twin lead cable on the UHF antenna under the screws.**

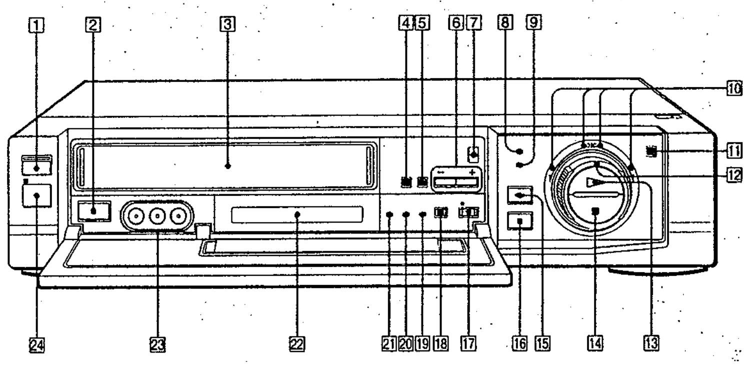
3 **Connect the 75-ohm coaxial cable to the U/V band separator/mixer.**

4 **Connect the U/V band separator/mixer to the VHF/UHF IN plug on the VCR.**

Identifying the Parts and Controls

Refer to the pages indicated for details.

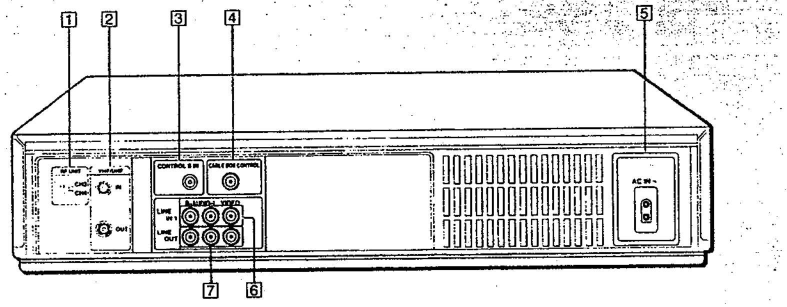
Front Panel


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

1. POWER ON/OFF switch and indicator (See page 60.)
2. ≜ EJECT button (See page 29.)
3. Cassette compartment (See page 29.)
4. TV/VTR button (See page 16.)
5. INPUT SELECT button (See page 32.)
6. CHANNEL –/+ buttons (See page 34.)
7. PICTURE switch (See page 30.)
8. REC indicator (See page 34.)
9. TIMER REC indicator (See page 38.)
10. FF, REW, PB, REV indicators
11. APC button/indicator (See page 53.)
12. DUAL MODE SHUTTLE ring (See page 48.)
13. ► PLAY button (See page 30.)
14. ■ STOP button (See pages 30 to 34.)
15. ◄◄◄ HI-SPEED REWIND button/indicator (See page 30.)
16. II PAUSE button/indicator (See pages 30 & 34 & 48.)
17. ● REC button (See page 34.)
18. TIMER REC ON/OFF button (See page 38.)
19. STEREO indicator (See page 32.)
20. INSERT VIDEO indicator (See page 58.)
21. INSERT AUDIO indicator (See page 58.)
22. Display window (See page 64.)
23. LINE IN 2 VIDEO/AUDIO jacks (See page 55.)
24. Remote sensor (See page 16.)

Refer to the pages indicated for details.

Rear Panel

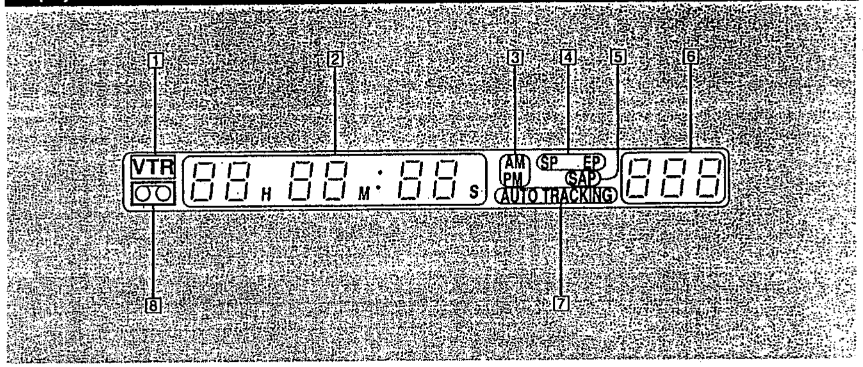

1
2
3
4
5
6
7
RF UNIT
VHF/UHF
IN
OUT
CONTROL S IN
CABLE BOX CONTROL
LINE IN 1
LINE OUT
AUDIO
VIDEO
AC IN ~

1. RF UNIT selector (See page 60.)
2. VHF/UHF IN/OUT connectors (F-type) (See pages 8 & 10 & 12 & 14.)
3. CONTROL S IN jack (See page 57.)
4. CABLE BOX CONTROL jack (See page 8.)
5. AC IN socket (See page 6.)
6. LINE IN 1 AUDIO and VIDEO jacks (phono type) (See page 7.)
7. LINE OUT AUDIO and VIDEO jacks (phono type) (See page 7.)

Identifying the Parts and Controls

Refer to the pages indicated for details.

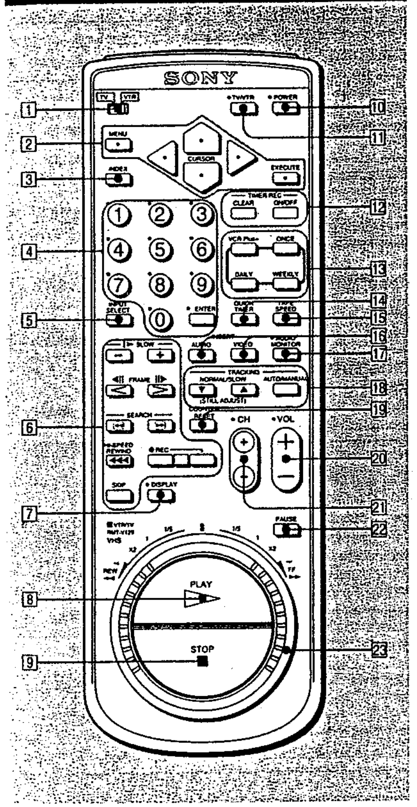
Display Window Indicators


1
2
3
4
5
6
VTR
H
M
S
AM
PM
SP
EP
SAP
AUTO TRACKING
8
7

1. VTR indicator (See page 34.)
2. Linear time counter and clock
3. AM/PM indicator
4. Tape speed indicator (See page 34.)
5. SAP (See page 36.)
6. Line and channel indicator
7. AUTO TRACKING indicator (See page 32.)
8. Cassette indicator (appears when a cassette is loaded) (See page 29.)

Refer to the pages indicated for details.

Remote Commander


SONY
TV
VTR
TV/VTR
POWER
MENU
CURSOR
EXECUTE
INDEX
TIMER REC
CLEAR
ON/OFF
VCR Plus+
ONCE
DAILY
WEEKLY
INPUT SELECT
ENTER
QUICK TIMER
TAPE SPEED
SLOW
AUDIO
VIDEO
AUDIO MONITOR
FRAME
TRACKING
NORMAL/SLOW
AUTO/MANUAL
STILL ADJUST
SEARCH
COUNTER RESET
CH
VOL
HI-SPEED REWIND
REC
SKIP
DISPLAY
PAUSE
PLAY
STOP
REW
FF
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23

1. TV/VTR remote control selector (See page 16.)
2. Menu operations buttons (See pages 19 and 20.)
   - MENU button
   - Cursor buttons (▲/▼/◄/►)
   - EXECUTE button
3. INDEX button (See page 50.)
4. Channel number buttons and ENTER button (See page 34.)
5. INPUT SELECT button (See page 34.)
6. Tape transport buttons
   - I► SLOW –/+ buttons (See page 49.)
   - </> ◄II FRAME II► buttons (See page 49.)
   - ⊖/⊕ SEARCH buttons (See page 49.)
   - ◄◄◄ HI-SPEED REWIND button (See page 30.)
   - ● REC button (See page 34.)
   - SKIP button (See page 49.)
7. DISPLAY button (See page 31.)
8. ► PLAY button (See page 30.)
9. ■ STOP button (See pages 30 & 34.)
10. POWER button (See page 60.)
11. TV/VTR button (See page 16.)
12. TIMER REC buttons (See page 42.)
    - CLEAR button
    - ON/OFF button
13. VCR Plus+ buttons (See page 46.)
    - VCR Plus+ button
    - ONCE button
    - DAILY button
    - WEEKLY button
14. QUICK TIMER button (See page 54.)
15. TAPE SPEED button (See page 38.)
16. INSERT buttons (See page 58.)
    - AUDIO button
    - VIDEO button
17. AUDIO MONITOR button (See page 32.)
18. TRACKING buttons (See pages 32 & 49.)
    - ▼/▲ NORMAL/SLOW (STILL ADJUST) buttons
    - AUTO/MANUAL button
19. COUNTER RESET button (See page 31.)
20. VOL (volume) button
21. CH (channel) button
22. PAUSE button (See pages 30 & 34 & 48.)
23. DUAL MODE SHUTTLE ring (See pages 30 & 48.)

Troubleshooting

If you have a problem with your VCR, first check the power cord connection, then go through the following list. Should the difficulty persist, unplug the unit, and contact your Sony dealer or local authorized Sony Service Center facility.

	Symptom	Possible causes and remedies
Power	The POWER switch doesn't work.	• The power cord is disconnected. • The VCR is in the timer standby mode.
	The power is turned on but the VCR doesn't work.	• The safety device on the VCR has switched on. Turn the power off, disconnect the power cord from the wall outlet, and let the VCR rest for at least an hour before trying it again.
Time and Date Clock	The clock has stopped and "–:– –" lights up.	• There has been a power interruption. Reset the time, date and timer settings.
TV Reception	TV reception is poor.	• The channel for the VCR is not correctly tuned on the TV. • The TV signal is weak. Adjust the direction of the antenna. • The AC power cord of the VCR is disconnected.
Recording and Playback	Shaky and/or snowy picture during recording.	• The TV's channel is not set to the one preset for the VCR. • The TV signal is weak. Adjust the direction of the antenna.
	No picture on the TV screen.	• Press TV/VTR so that the VTR indication appears in the display window. • The TV channel is not set to CH 3 or CH 4, or the video input has not been selected on the TV or monitor.
	The VCR won't record.	• No cassette has been inserted. • The cassette is at its end. • INPUT SELECT is not set correctly.
	The playback picture is not clear.	• The channel for the VCR is not correctly tuned on the TV. • A cassette recorded on another VCR is being played back. Adjust the tracking with the TRACKING NORMAL/SLOW and STILL ADJUST. • The video heads are dirty. Clean the heads using the Sony T-25CL video head cleaning cassette. For details on cleaning, refer to the instructions furnished with the cleaning cassette. If a cleaning cassette is not available in your area, have the heads cleaned at your nearest Sony Service Center facility. (Do not use a commercially-available wet-type cleaning cassette. It may damage the video heads.) • The video heads are worn out.

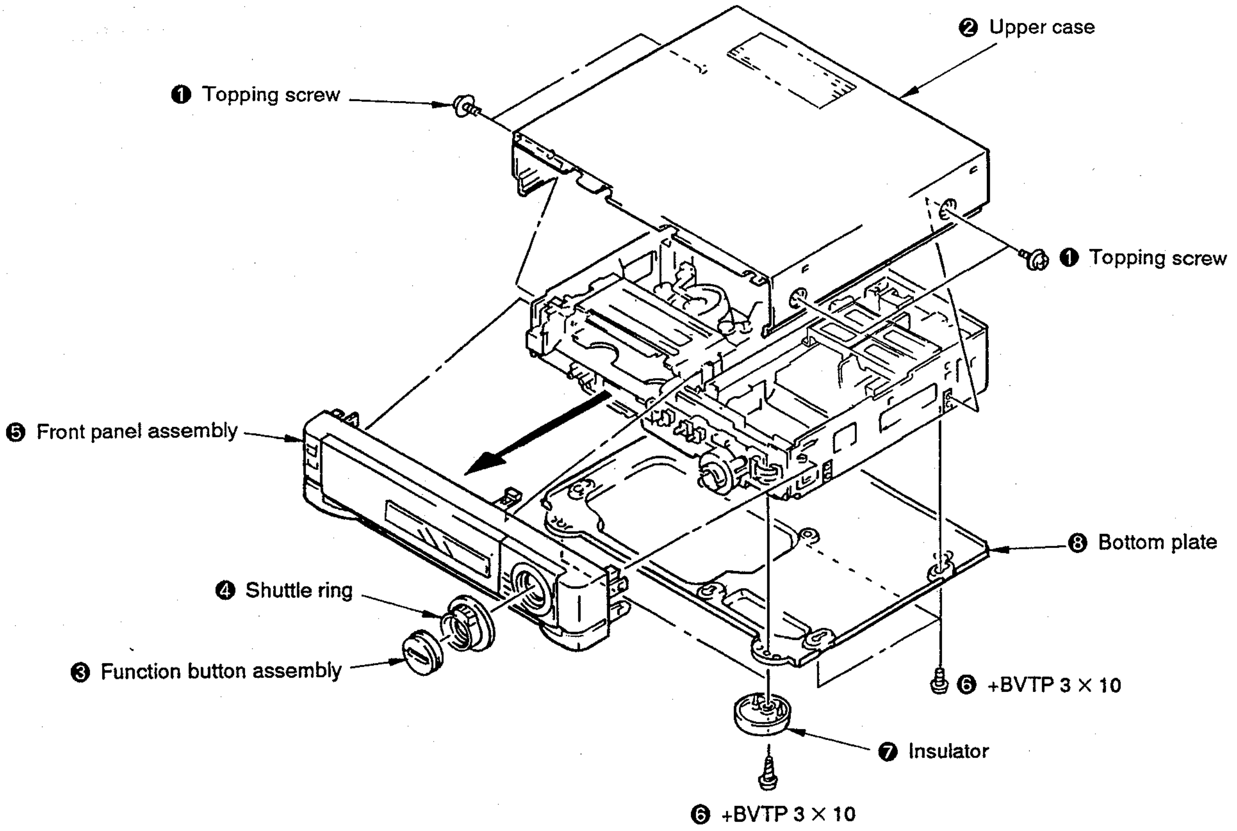
	Symptom	Possible causes and remedies
Recording and Playback	The picture moves vertically during picture search mode.	• Adjust the vertical hold control on the TV or color monitor.
	The sound drops out.	• The cassette is defective. Use a new video cassette.
	Stereo recording cannot be made.	• AUTO STEREO is set to "OFF" in the SET UP MENU.
	Both main and SAP sounds are heard when playing back a cassette on which an MTS broadcast was recorded.	• AUDIO MIX is set to "ON" in the SET UP MENU.
	No sound is recorded on the normal audio track.	• NORMAL AUDIO is set to "SAP" in the SET UP MENU when there is no SAP broadcast.
Timer Recording	Timer setting cannot be made.	• The current time has not been preset.
	The TIMER REC (recording) indicator is not lit even though you've pressed TIMER REC (ON/OFF).	• No cassette has been inserted. • The cassette is at its end. • No setting for timer-recording has been made.
	The cassette is ejected when you press TIMER REC (ON/OFF).	• The safety tab of the cassette has been removed.
	Timer recording was not made.	• There has been a power interruption of one hour or more. • TIMER REC (ON/OFF) was not pressed. • CABLE BOX CONTROL setup was not done or was done incorrectly. • The cable box was not turned on when recording started. • The cable box is not receiving the control signal from the VCR. Reposition the cable box away from the VCR. Make sure that the Cable Mouse is attached as shown on page 8.
Display	The display does not appear on *the screen.*	• Press DISPLAY.
Others	Cassette cannot be inserted.	• A cassette has already been inserted.
	The Remote Commander cannot be operated.	• The batteries are low.
	The tracking indicator does not appear on the screen.	• The recording condition of the cassette is very poor and tracking cannot be adjusted.
	The channels on the VCR cannot be changed.	• The CABLE BOX CONTROL is set to "ON." Set the CABLE BOX CONTROL to "OFF."

SECTION 2

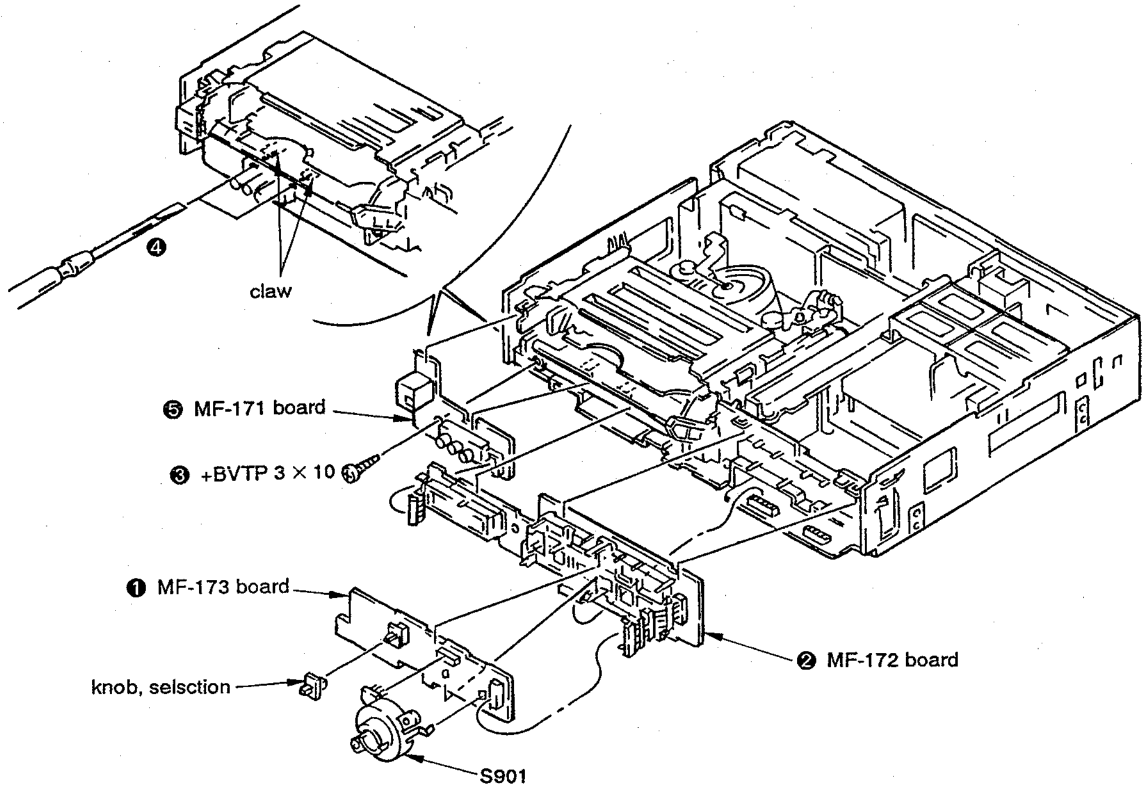
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

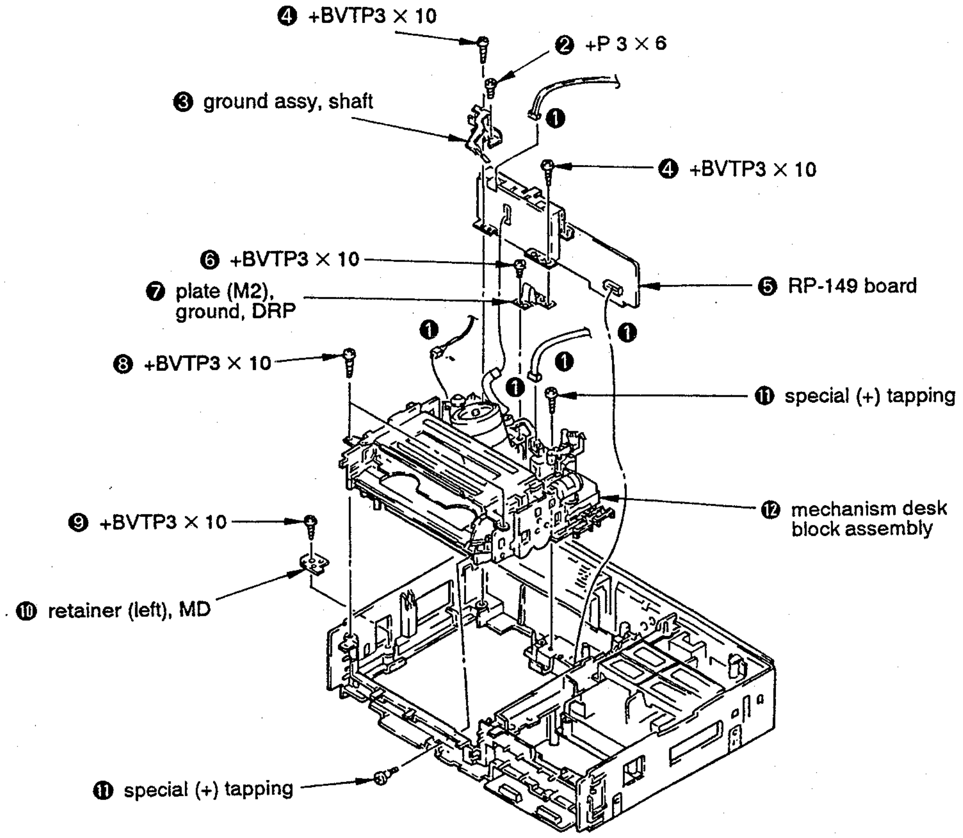
2-1. FRONT PANEL AND CABINET ASSEMBLIES


❷ Upper case
❶ Topping screw
❶ Topping screw
❺ Front panel assembly
❽ Bottom plate
❹ Shuttle ring
❸ Function button assembly
❻ +BVTP 3 × 10
❼ Insulator
❻ +BVTP 3 × 10

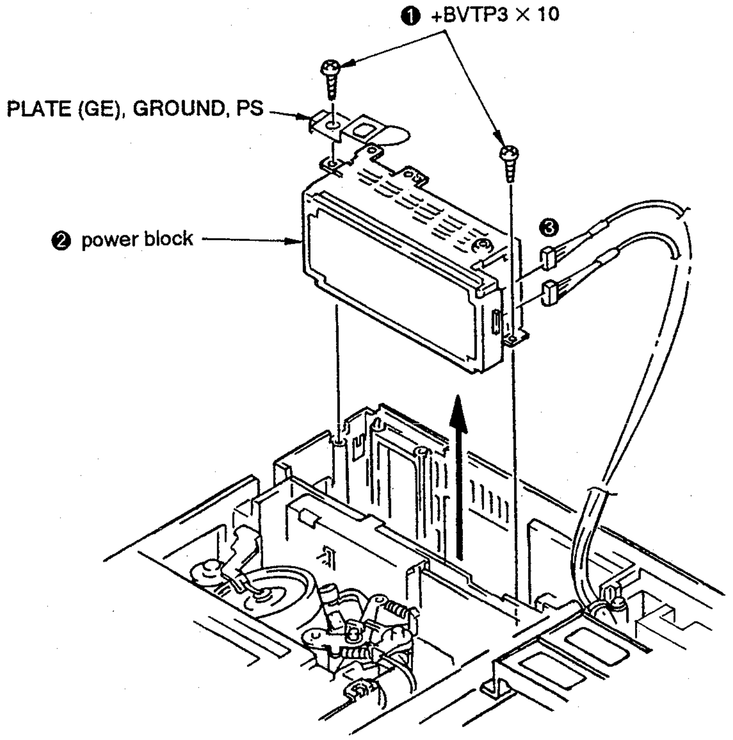
2-2. MF-171, MF-172, MF-173 BOARD


❹
claw
❺ MF-171 board
❸ +BVTP 3 × 10
❶ MF-173 board
knob, selsction
❷ MF-172 board
S901

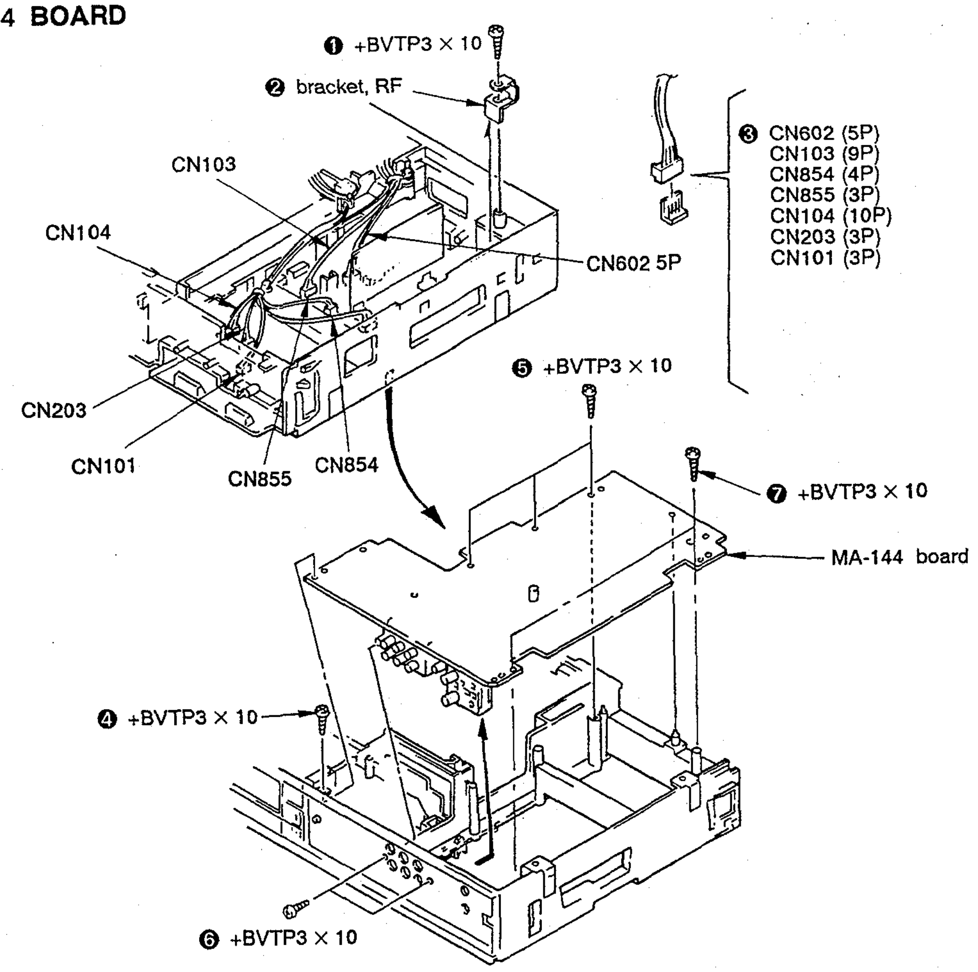
2-3. RP-149 BOARD AND MECHANISM DECK BLOCK ASSSEMBLY


❹ +BVTP3 × 10
❷ +P 3 × 6
❸ ground assy, shaft
❶
❹ +BVTP3 × 10
❻ +BVTP3 × 10
❼ plate (M2), ground, DRP
❺ RP-149 board
❶
❶
❽ +BVTP3 × 10
❶
❶
⓫ special (+) tapping
❾ +BVTP3 × 10
⓬ mechanism desk block assembly
❿ retainer (left), MD
⓫ special (+) tapping

2-4. POWER BLOCK


❶ +BVTP3 × 10
PLATE (GE), GROUND, PS
❷ power block
❸

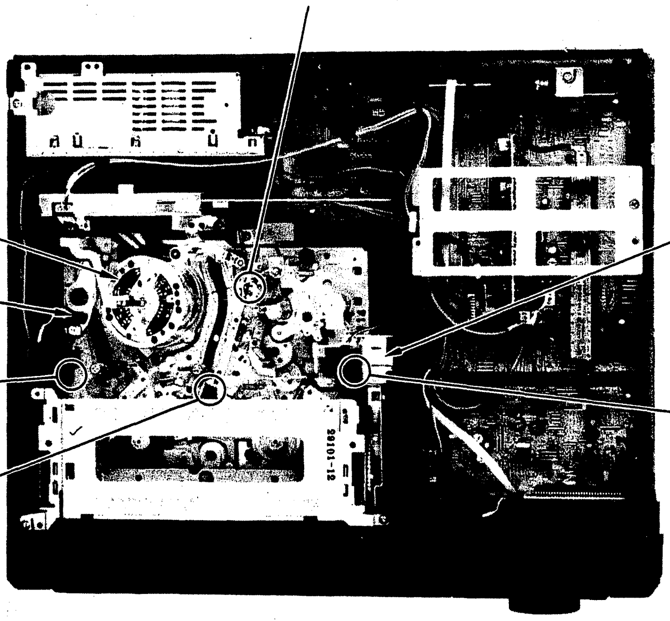
2-5. MA-144 BOARD



❶ +BVTP3 × 10
❷ bracket, RF
❸ CN602 (5P)
CN103 (9P)
CN854 (4P)
CN855 (3P)
CN104 (10P)
CN203 (3P)
CN101 (3P)
CN103
CN104
CN602 5P
CN203
CN101
CN855
CN854
❺ +BVTP3 × 10
❼ +BVTP3 × 10
MA-144 board
❹ +BVTP3 × 10
❻ +BVTP3 × 10

2-6. INTERNAL VIEWS

– Top Side –



ACE head block ass'y
A-6761-129-A

drum ass'y
DZH-49A-R 8-848-580-11 (900HF)
DZH-50A-R 8-848-582-11 (750HF/751HF)
upper drum ass'y
DZR-49-R 8-848-581-11 (900HF)
DZR-50-R 8-848-583-11 (750HF/751HF)

FE head
1-543-647-11

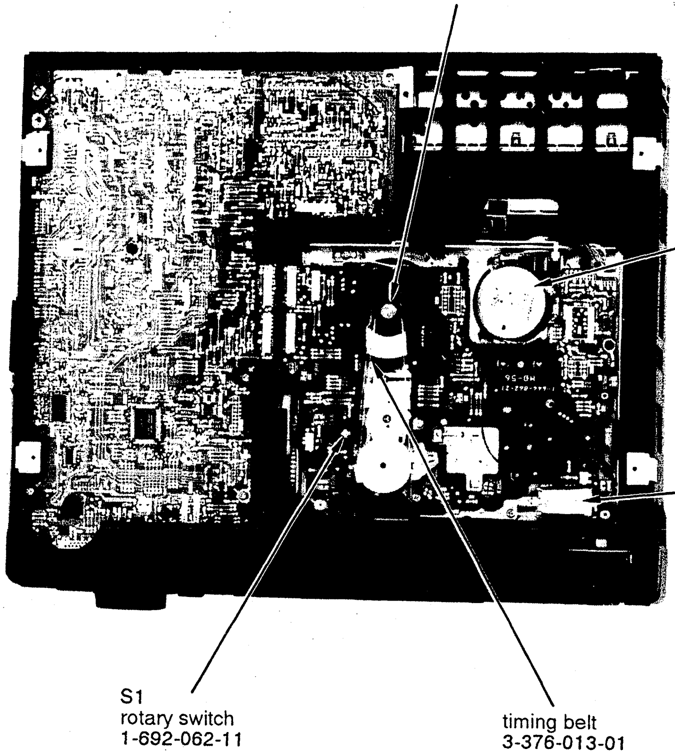
M904
loading motor
X-3727-784-1

Q002
tape end sensor
8-729-926-31

Q001
tape top sensor
8-729-926-31

D001
tape top/end LED
8-719-985-00

– Bottom Side –



M902
capstan motor
8-835-489-11

M901
drum motor

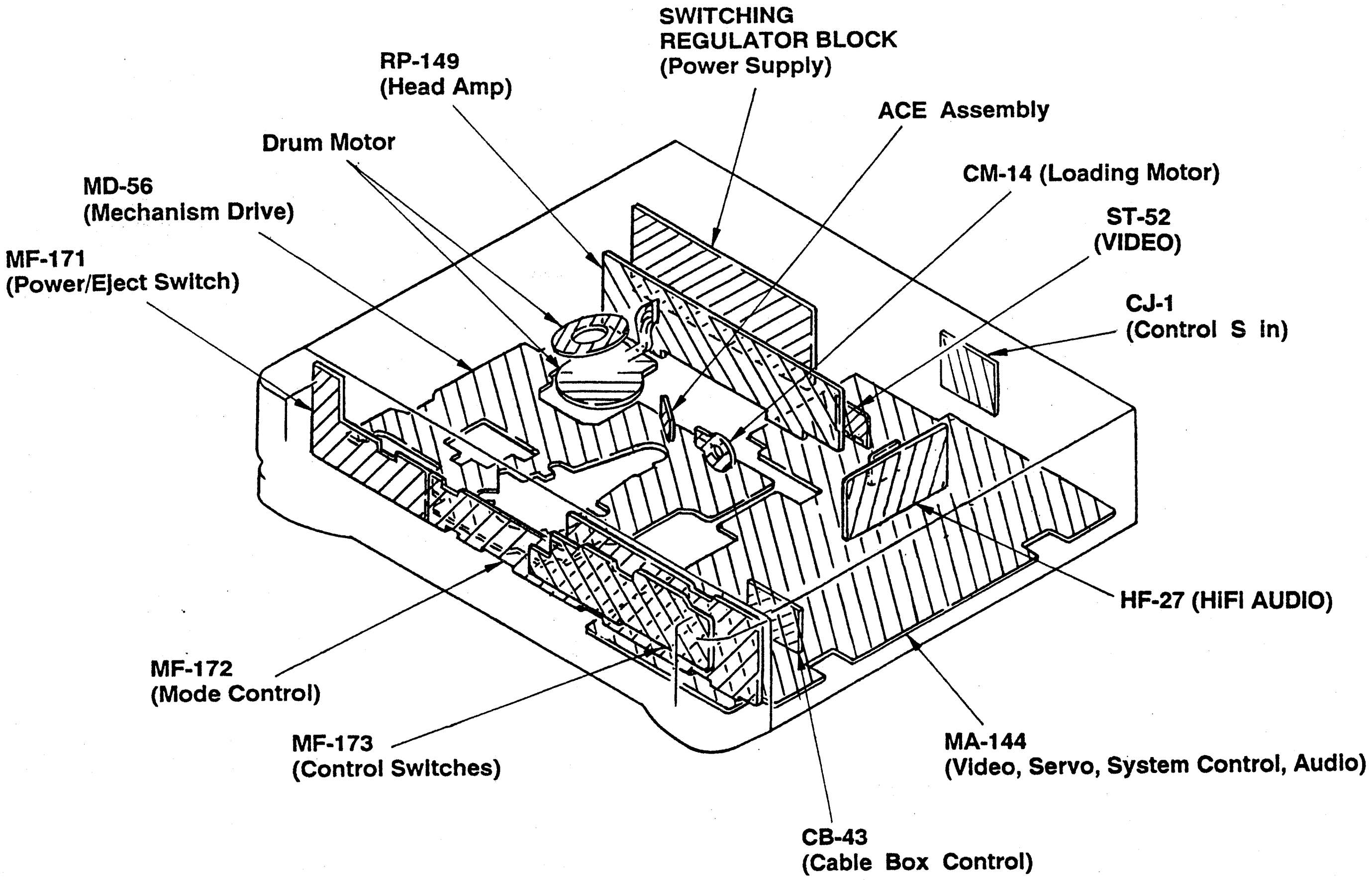
M903
cam motor
X-3733-302-1

S1
rotary switch
1-692-062-11

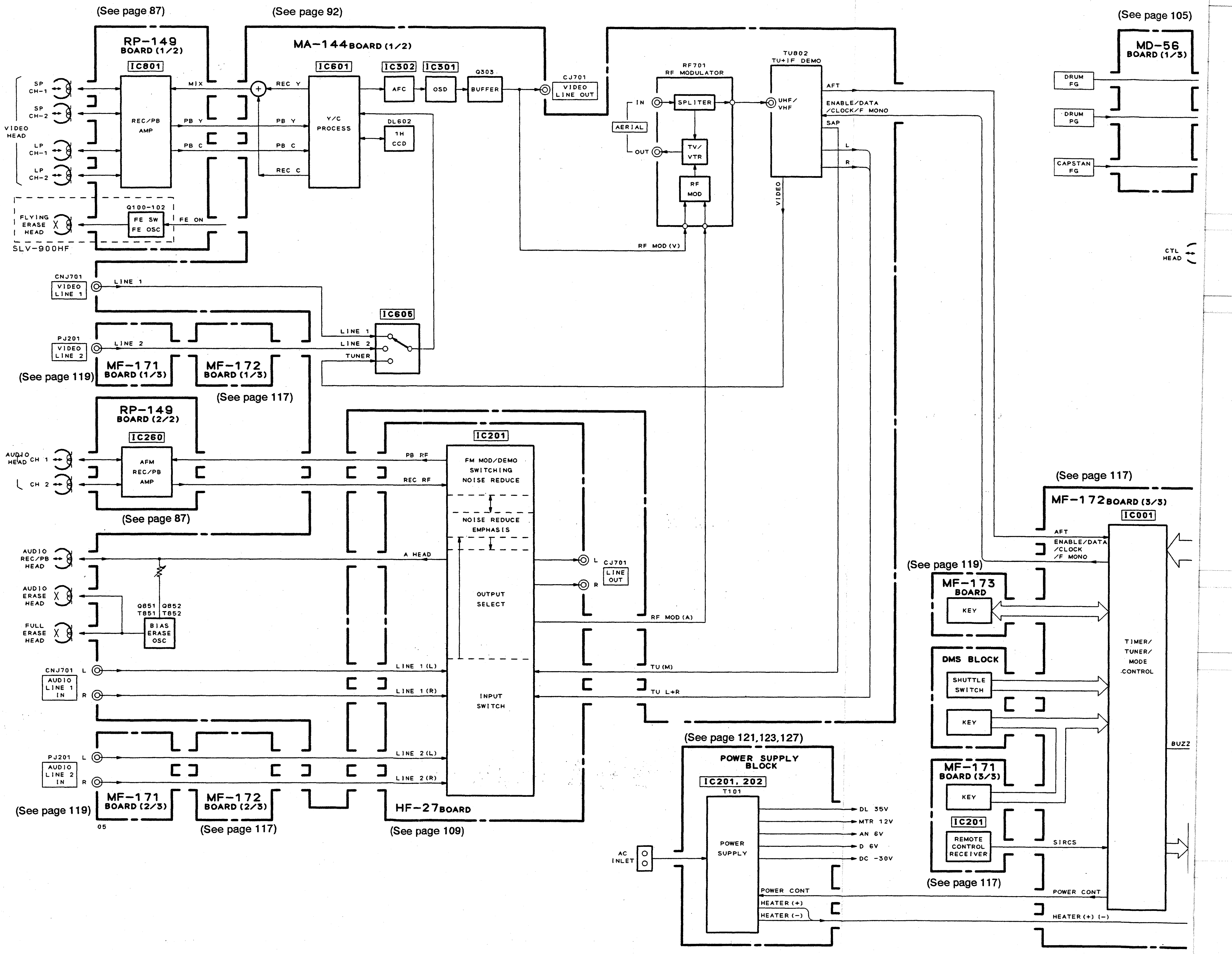
timing belt
3-376-013-01

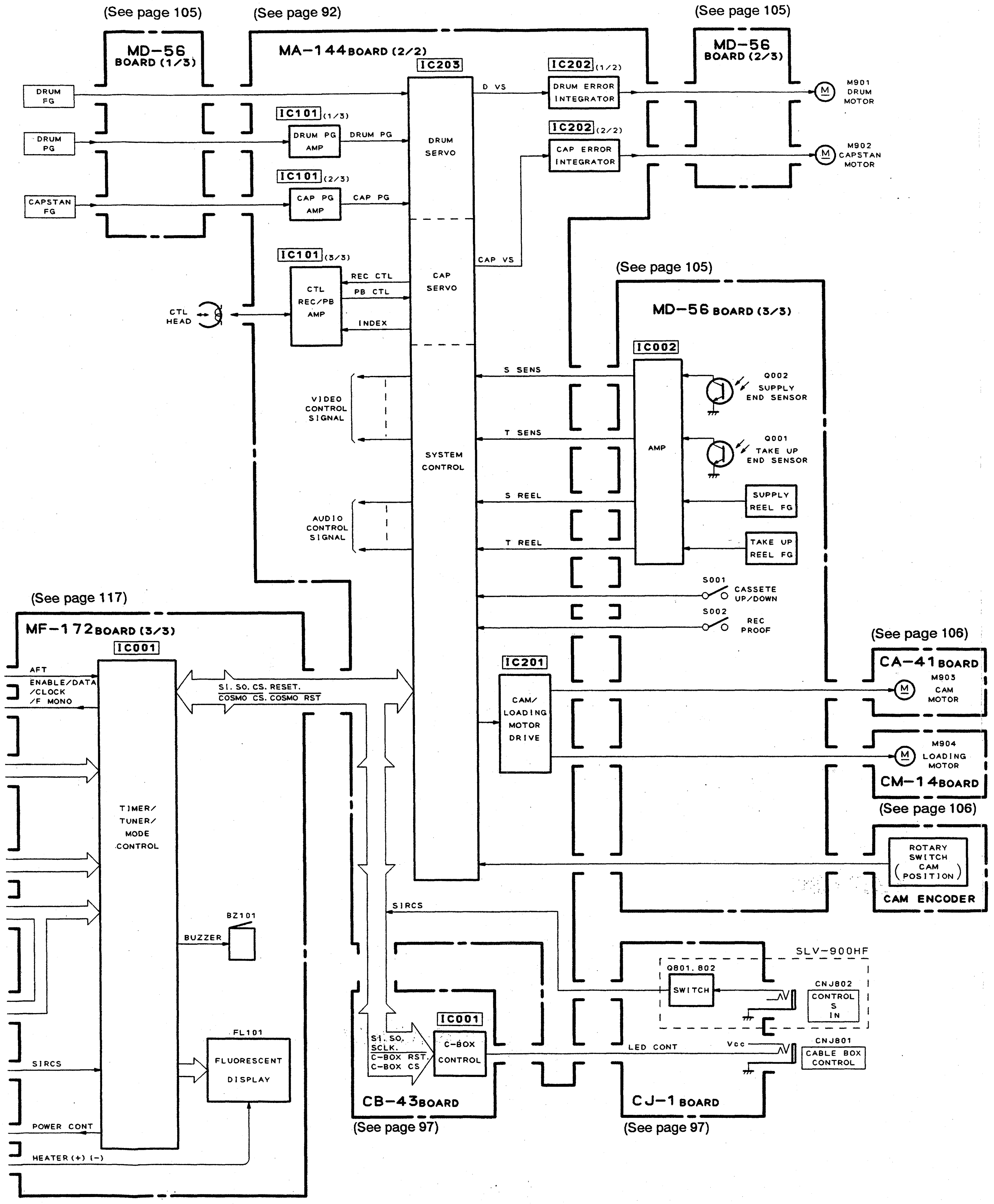
SECTION 3
DIAGRAMS

3-1. CIRCUIT BOARDS LOCATION

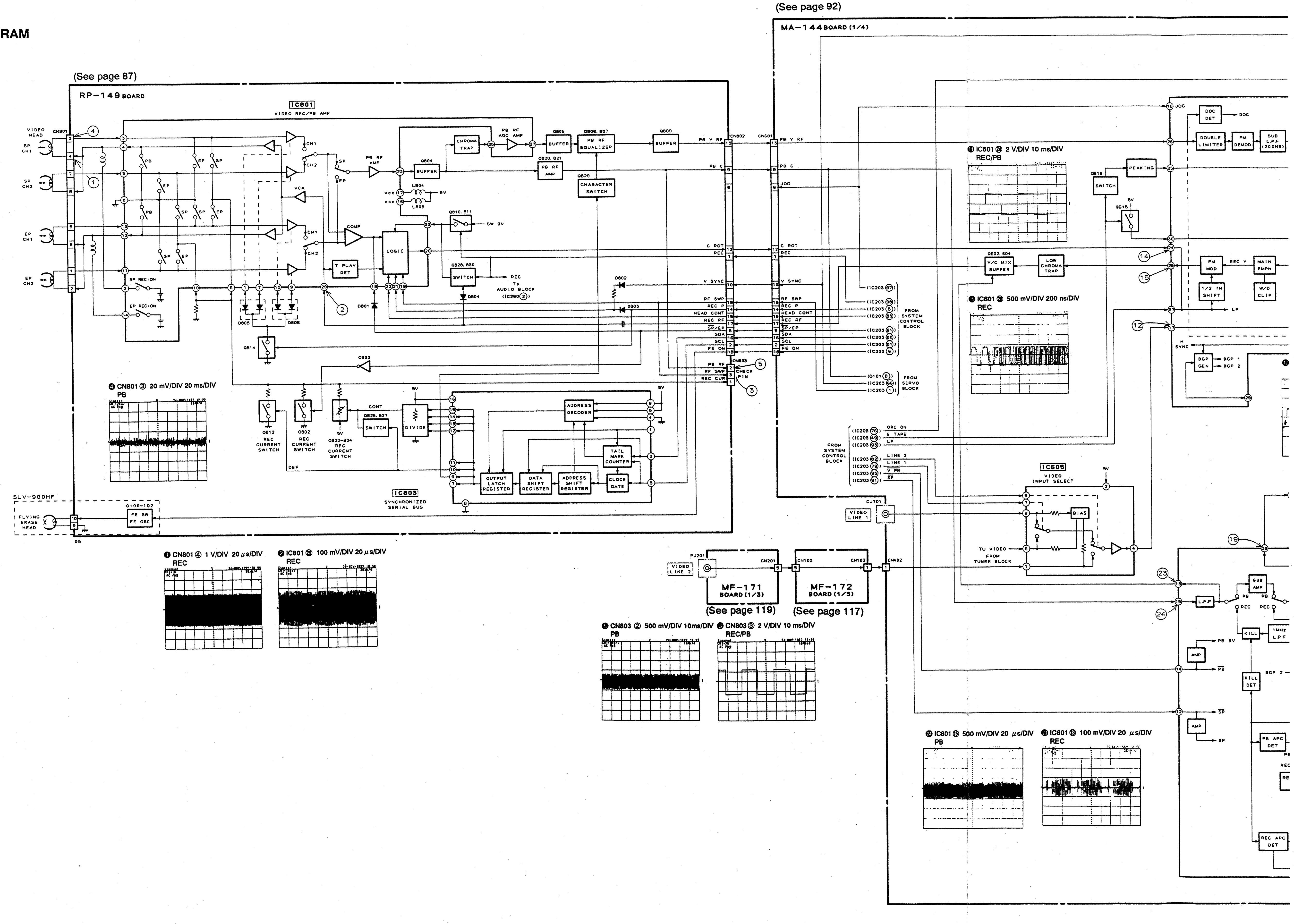

SWITCHING REGULATOR BLOCK (Power Supply)
RP-149 (Head Amp)
ACE Assembly
Drum Motor
CM-14 (Loading Motor)
MD-56 (Mechanism Drive)
ST-52 (VIDEO)
MF-171 (Power/Eject Switch)
CJ-1 (Control S in)
HF-27 (HIFI AUDIO)
MF-172 (Mode Control)
MF-173 (Control Switches)
MA-144 (Video, Servo, System Control, Audio)
CB-43 (Cable Box Control)

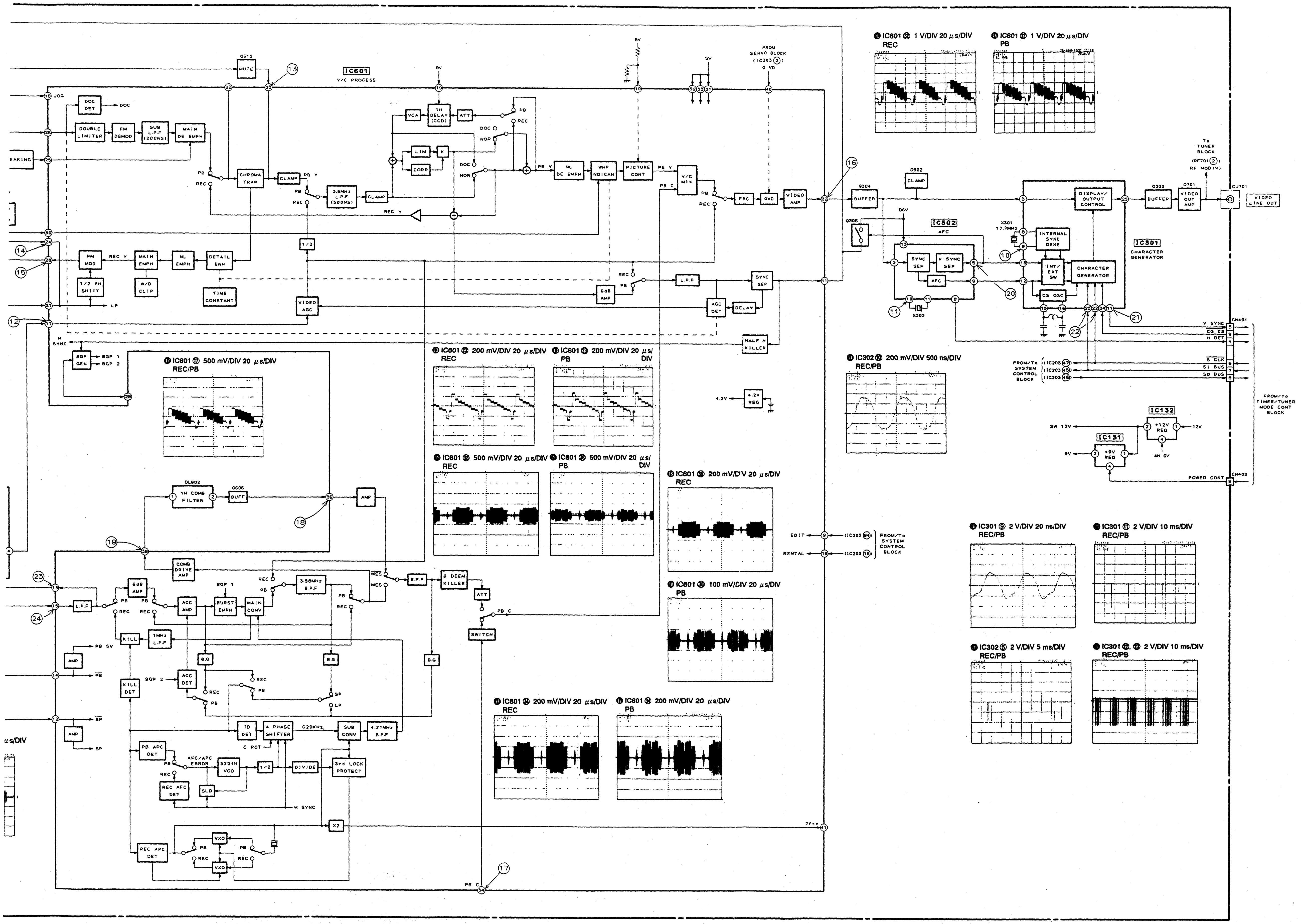
3-2. OVERALL BLOCK DIAGRAM


(See page 87)
RP-149 BOARD (1/2)
IC801
REC/PB AMP
MIX
PB Y
PB C
FE ON
Q100-102
FE SW
FE OSC
SP CH-1
SP CH-2
LP CH-1
LP CH-2
VIDEO HEAD
FLYING ERASE HEAD
SLV-900HF
(See page 92)
MA-144 BOARD (1/2)
REC Y
PB Y
PB C
REC C
IC601
Y/C PROCESS
IC302
AFC
IC301
OSD
Q303
BUFFER
DL602
1H CCD
CJ701
VIDEO LINE OUT
RF701
RF MODULATOR
IN
OUT
AERIAL
SPLITER
TV/VTR
RF MOD
RF MOD (V)
TU802
TU+IF DEMO
UHF/VHF
AFT
ENABLE/DATA /CLOCK/F MONO
SAP
L
R
VIDEO
(See page 105)
MD-56 BOARD (1/3)
DRUM FG
DRUM PG
CAPSTAN FG
CTL HEAD
CNJ701
VIDEO LINE 1
LINE 1
PJ201
VIDEO LINE 2
LINE 2
IC605
LINE 1
LINE 2
TUNER
(See page 119)
MF-171 BOARD (1/3)
MF-172 BOARD (1/3)
(See page 117)
RP-149 BOARD (2/2)
IC260
AFM REC/PB AMP
AUDIO HEAD
CH 1
CH 2
(See page 87)
IC201
PB RF
REC RF
FM MOD/DEMO SWITCHING NOISE REDUCE
NOISE REDUCE EMPHASIS
OUTPUT SELECT
INPUT SWITCH
A HEAD
AUDIO REC/PB HEAD
AUDIO ERASE HEAD
FULL ERASE HEAD
Q851 Q852
T851 T852
BIAS ERASE OSC
CJ701
LINE OUT
L
R
RF MOD (A)
TU (M)
TU L+R
CNJ701
AUDIO LINE 1 IN
L
R
LINE 1 (L)
LINE 1 (R)
PJ201
AUDIO LINE 2 IN
L
R
LINE 2 (L)
LINE 2 (R)
(See page 119)
MF-171 BOARD (2/3)
05
MF-172 BOARD (2/3)
(See page 117)
HF-27 BOARD
(See page 109)
(See page 121,123,127)
POWER SUPPLY BLOCK
IC201, 202
T101
POWER SUPPLY
AC INLET
DL 35V
MTR 12V
AN 6V
D 6V
DC -30V
POWER CONT
HEATER (+)
HEATER (-)
(See page 117)
MF-172 BOARD (3/3)
IC001
AFT
ENABLE/DATA /CLOCK /F MONO
TIMER/ TUNER/ MODE CONTROL
(See page 119)
MF-173 BOARD
KEY
DMS BLOCK
SHUTTLE SWITCH
KEY
MF-171 BOARD (3/3)
KEY
IC201
REMOTE CONTROL RECEIVER
(See page 117)
SIRCS
BUZZ
POWER CONT
HEATER (+) (-)


(See page 105)
MD-56 BOARD (1/3)
(See page 92)
MA-144 BOARD (2/2)
IC203
(See page 105)
MD-56 BOARD (2/3)
DRUM FG
DRUM PG
CAPSTAN FG
IC101 (1/3)
DRUM PG AMP
DRUM PG
IC101 (2/3)
CAP PG AMP
CAP PG
IC101 (3/3)
CTL REC/PB AMP
REC CTL
PB CTL
INDEX
CTL HEAD
DRUM SERVO
CAP SERVO
SYSTEM CONTROL
D VS
CAP VS
IC202 (1/2)
DRUM ERROR INTEGRATOR
IC202 (2/2)
CAP ERROR INTEGRATOR
M901 DRUM MOTOR
M902 CAPSTAN MOTOR
VIDEO CONTROL SIGNAL
AUDIO CONTROL SIGNAL
(See page 105)
MD-56 BOARD (3/3)
IC002
AMP
S SENS
T SENS
S REEL
T REEL
Q002 SUPPLY END SENSOR
Q001 TAKE UP END SENSOR
SUPPLY REEL FG
TAKE UP REEL FG
S001 CASSETE UP/DOWN
S002 REC PROOF
IC201
CAM/ LOADING MOTOR DRIVE
(See page 106)
CA-41 BOARD
M903 CAM MOTOR
M904 LOADING MOTOR
CM-14 BOARD
(See page 106)
ROTARY SWITCH (CAM POSITION)
CAM ENCODER
(See page 117)
MF-172 BOARD (3/3)
IC001
AFT
ENABLE/DATA /CLOCK /F MONO
TIMER/ TUNER/ MODE CONTROL
SI. SO. CS. RESET.
COSMO CS. COSMO RST
BZ101
BUZZER
FL101
FLUORESCENT DISPLAY
SIRCS
POWER CONT
HEATER (+) (−)
SIRCS
IC001
C-BOX CONTROL
SI. SO. SCLK. C-BOX RST. C-BOX CS
CB-43 BOARD
(See page 97)
SLV-900HF
Q801. 802
SWITCH
CNJ802
CONTROL S IN
LED CONT
Vcc
CNJ801
CABLE BOX CONTROL
CJ-1 BOARD
(See page 97)

3-3. VIDEO BLOCK DIAGRAM


(See page 87)
RP-149 BOARD
IC801
VIDEO REC/PB AMP
VIDEO HEAD
SP CH1
SP CH2
EP CH1
EP CH2
CN801
VCA
COMP
LOGIC
T PLAY DET
PB RF AMP
BUFFER
CHROMA TRAP
PB RF AGC AMP
Q805 BUFFER
Q806, 807 PB RF EQUALIZER
Q809 BUFFER
Q820, 821 PB RF AMP
Q829 CHARACTER SWITCH
Q810, 811 SW 9V
Q828, 830 SWITCH
REC To AUDIO BLOCK (IC260 ②)
D802
D803
D804
D801
D805
D806
Q814
Q803
Q812 REC CURRENT SWITCH
Q802 REC CURRENT SWITCH
Q822-824 REC CURRENT SWITCH
Q826, 827 SWITCH
DIVIDE
CONT
DEF
ADDRESS DECODER
TAIL MARK COUNTER
OUTPUT LATCH REGISTER
DATA SHIFT REGISTER
ADDRESS SHIFT REGISTER
CLOCK GATE
IC803
SYNCHRONIZED SERIAL BUS
SLV-900HF
FLYING ERASE HEAD
Q100-102 FE SW FE OSC
CN802
PB Y RF
PB C
C ROT
REC
V SYNC
RF SWP
REC P
HEAD CONT
REC RF
SP/EP
SDA
SCL
FE ON
CN803
PB RF
RF SWP
REC CUR
CHECK PIN
④ CN801 ③ 20 mV/DIV 20 ms/DIV PB
❶ CN801 ④ 1 V/DIV 20 µs/DIV REC
❷ IC801 ㉙ 100 mV/DIV 20 µs/DIV REC
❺ CN803 ② 500 mV/DIV 10ms/DIV PB
❸ CN803 ③ 2 V/DIV 10 ms/DIV REC/PB
(See page 92)
MA-144 BOARD (1/4)
CN601
JOG
(IC203 ㉗)
(IC203 ㊳)
(IC203 ⑤)
(IC203 ㊵)
(IC203 ㉛)
(IC203 ㊵)
(IC203 ㉛)
(IC203 ⑥)
FROM SYSTEM CONTROL BLOCK
(D101 ⑧)
(IC203 ㊵)
(IC203 ①)
FROM SERVO BLOCK
⓫ IC601 ㉔ 2 V/DIV 10 ms/DIV REC/PB
⓯ IC601 ㉖ 500 mV/DIV 200 ns/DIV REC
⓭ IC601 ⑮ 500 mV/DIV 20 µs/DIV PB
⓮ IC601 ⑬ 100 mV/DIV 20 µs/DIV REC
DOC DET
DOC
DOUBLE LIMITER
FM DEMOD
SUB L.P.F (200NS)
PEAKING
Q616 SWITCH
Q615
5V
Q602, 604 Y/C MIX BUFFER
LOW CHROMA TRAP
FM MOD
REC Y
MAIN EMPH
1/2 fH SHIFT
W/D CLIP
LP
H SYNC
BGP GEN
BGP 1
BGP 2
(IC203 ㊻) ORC ON
(IC203 ㊾) E TAPE
(IC203 ㊸) LP
(IC203 ㊿) LINE 2
(IC203 ㊹) LINE 1
(IC203 ㊺) V PB
(IC203 ㊶) SP
FROM SYSTEM CONTROL BLOCK
IC605
VIDEO INPUT SELECT
BIAS
TU VIDEO FROM TUNER BLOCK
CJ701
VIDEO LINE 1
PJ201
VIDEO LINE 2
CN201
MF-171 BOARD (1/3)
(See page 119)
CN103
CN102
MF-172 BOARD (1/3)
(See page 117)
CN402
L.P.F
6dB AMP
PB
REC
KILL
1MHz L.P.F
PB 5V
AMP
KILL DET
BGP 2
SP
PB APC DET
REC APC DET


IC601
Y/C PROCESS
Q613
MUTE
DOC DET
DOUBLE LIMITER
FM DEMOD
SUB L.P.F (200NS)
MAIN DE EMPH
CHROMA TRAP
CLAMP
3.5MHz L.P.F (500NS)
VCA
1H DELAY (CCD)
ATT
LIM
CORR
NL DE EMPH
WHP NOICAN
PICTURE CONT
Y/C MIX
FBC
OVD
VIDEO AMP
FROM SERVO BLOCK (IC203 ②) Q VD
FM MOD
MAIN EMPH
NL EMPH
DETAIL ENH
1/2 FH SHIFT
W/D CLIP
TIME CONSTANT
VIDEO AGC
6dB AMP
L.P.F
SYNC SEP
AGC DET
DELAY
HALF H KILLER
BGP GEN
BGP 1
BGP 2
4.2V REG
DL602
1H COMB FILTER
Q606
BUFF
AMP
COMB DRIVE AMP
6dB AMP
ACC AMP
BURST EMPH
MAIN CONV
3.58MHz B.P.F
B.P.F
B DEEM KILLER
ATT
SWITCH
1MHz L.P.F
KILL
KILL DET
ACC DET
B.G
ID DET
4 PHASE SHIFTER
629KHz
SUB CONV
4.21MHz B.P.F
PB APC DET
AFC/APC ERROR
320fH VCO
1/2
DIVIDE
3rd LOCK PROTECT
REC AFC DET
SLD
H SYNC
X2
VXO
REC APC DET
2fsc
PB C
Q304
BUFFER
Q302
CLAMP
Q306
IC302
AFC
SYNC SEP
V. SYNC SEP
X301 17.7MHz
X302
INTERNAL SYNC GENE
INT/EXT SW
CS OSC
DISPLAY/OUTPUT CONTROL
CHARACTER GENERATOR
IC301
CHARACTER GENERATOR
Q303
BUFFER
Q701
VIDEO OUT AMP
To TUNER BLOCK (RF701 ②) RF MOD (V)
CJ701
VIDEO LINE OUT
CN401
V SYNC
CG CS
H DET
S CLK
SI BUS
SO BUS
FROM/To SYSTEM CONTROL BLOCK
FROM/To TIMER/TUNER MODE CONT BLOCK
IC132
+12V REG
SW 12V
12V
IC131
+9V REG
9V
AN 6V
POWER CONT
CN402
EDIT
RENTAL
(IC203 ㊹)
(IC203 ⑯)
FROM/To SYSTEM CONTROL BLOCK
⑯ IC601 ㉜ 1 V/DIV 20 μs/DIV REC
⑯ IC601 ㉜ 1 V/DIV 20 μs/DIV PB
⑫ IC601 ⑰ 500 mV/DIV 20 μs/DIV REC/PB
⑬ IC601 ㉓ 200 mV/DIV 20 μs/DIV REC
⑬ IC601 ㉓ 200 mV/DIV 20 μs/DIV PB
⑲ IC601 ㊳ 500 mV/DIV 20 μs/DIV REC
⑲ IC601 ㊳ 500 mV/DIV 20 μs/DIV PB
⑱ IC601 ㊱ 200 mV/DIV 20 μs/DIV REC
⑱ IC601 ㊱ 100 mV/DIV 20 μs/DIV PB
⑰ IC601 ㉞ 200 mV/DIV 20 μs/DIV REC
⑰ IC601 ㉞ 200 mV/DIV 20 μs/DIV PB
⑳ IC302 ⑥ 200 mV/DIV 500 ns/DIV REC/PB
⑩ IC301 ⑨ 2 V/DIV 20 ns/DIV REC/PB
⑪ IC301 ⑪ 2 V/DIV 10 ms/DIV REC/PB
⑪ IC302 ⑤ 2 V/DIV 5 ms/DIV REC/PB
㉒ IC301 ㉒, ㉓ 2 V/DIV 10 ms/DIV REC/PB
μs/DIV

3-4. SYSTEM CONTROL – VIDEO BLOCK INTERFACE

Signal	Pin No.	I/O	STOP/ FF/ REW	TAPE THREAD-ING	TAPE UNTHREAD-ING	PB	PB• PAUSE	SLOW	×2	CUE	REVIEW	REC	REC• PAUSE
$\overline{\text{V•PB}}$	MA-144 IC203 (95)	O	H	H	H	L	L	L	L	L	L	H	H
HEAD CONT	MA-144 IC203 (85)	O	L	L	L	L	HI-Z (2.5 V)	*1	*10	*5	*5	L	L
RF SW P (SW30)	MA-144 IC203 ①	O	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
Q VD/V MUTE	MA-144 IC203 ②	O	L	L	L	*3	*4	*4	*4	*4	*4	L	L
$\overline{\text{SP}}$	MA-144 IC203 (91)	O	*6	*6	*6	*7	*7	*7	*7	*7	*7	*6	*6
EP	MA-144 IC203 (92)	O	*12	*12	*12	*7	*7	*7	*7	*7	*7	*12	*12
LP	MA-144 IC203 (93)	O	*13	*13	*13	*7	*7	*7	*7	*7	*7	*13	*13
REC•P	MA-144 IC203 ⑤	O	L	L	L	L	L	L	L	L	L	L	H
REC	MA-144 IC203 (98)	O	L	L	L	L	L	L	L	L	L	H	H
V SYNC	MA-144 IC203 (66)	I	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8
$\overline{\text{OSD MUTE}}$	MA-144 IC203 (71)	O	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9
EDIT	MA-144 IC203 (94)	O	*11	*11	*11	*14	*14	*14	*14	*14	*14	*11	*11
E TAPE	MA-144 IC203 ㊾	O	H	H	H	*15	*15	*15	*15	*15	*15	H	H
RENTAL	MA-144 IC203 ⑨	O	L	L	L	*16	*16	*16	*16	*16	*16	L	L
NTSC/$\overline{\text{PAL}}$	MA-144 IC203 ㉗	O	*17	*17	*17	*18	*18	*18	*18	*18	*18	*17	*17
3.58NTSC	MA-144 IC203 ㉖	O	*19	*19	*19	*20	*20	*20	*20	*20	*20	*19	*19
3.58/4.43NTSC	MA-144 IC203 ㉕	O	*17	*17	*17	*21	*21	*21	*21	*21	*18	*17	*17
JOG	MA-144 IC203 (97)	O	L	L	L	L	H	H	H	H	H	L	L
SECAM	MA-144 IC203 ㉒	I/O	*22	*22	*23	*24	*24	*24	*24	*24	*24	*22	*22
MESECAM	MA-144 IC203 ㉑	I/O	*22	*22	*23	*23	*23	*23	*23	*23	*23	*22	*22
ORC SEttei	MA-144 IC203 (76)	O	L	L	L	L	L	L	L	L	L	*25	*25
$\overline{\text{ORC SEttei}}$	RP-149 IC803 ⑦	O	H	H	H	H	H	H	H	H	H	*26	*26
$\overline{\text{E TAPE}}$	RP-149 IC803 ⑨	O	L	L	L	*27	*27	*27	*27	*27	*27	L	L
ORC DEFAULT	RP-149 IC803 ⑩	O	*28	*28	*28	H	H	H	H	H	H	*28	*28
NTSC	RP-149 IC803 ⑪	O	*17	*17	*17	*18	*18	*18	*18	*18	*18	*17	*17

*1. Foward slow mode: "HI-Z (2.5 V)" in tape stop, "L" in tape running (approx. 40 msec.).
Foward slow mode: "HI-Z (2.5 V)" in tape stop, "H" in tape running SP mode (approx. 40 msec.).
"L" in tape running EP mode (approx. 40 msec.).

*2. Synchronized with drum rotation. 30 Hz 50% duty pulse.

*3. Normally "L". "H" when CTL signal is not generated.

*4. V period "H" pulse.

*5. "H" in SP mode. "L" in EP mode.

*6. Selected by REC mode. SP mode: "L".

*7. Selected by tape recording mode.

Signal \ Model	SP	LP	EP
$\overline{\text{SP}}$ (91)	L	H	H
EP (92)	L	L	H
LP (93)	L	H	L

*8. Composite Sync signal (positive).

*9. "L" when menu screen or blue back screen.

*10. "HI-Z (2.5 V)" in EP mode. "H" in SP mode.

*11. Selected by "PICTURE SW": "H" in EDIT position.

*12. Selected by REC mode: "H" EP mode.

*13. Selected by REC mode: "H" LP mode.

*14. Selected by "PICTURE SW": "H" in EDIT position. "H" when "E TAPE" is "H" (Euro model, PAL PB).

*15. "L" when APC is off. "H" when APC is ON and "HG tape" is used.

*16. Selected by "PICTURE SW" "H" in RENTAL position or "H" when Low grade tape is used in APC ON mode.

*17. "H" when input signal is NTSC mode (GA-PAL model) (Euro-PAL mode).
"H" when input signal is NTSC mode (NTSC model).

*18. Selected by "Color system SW": "H" in NTSC mode (GA-PAL, Euro-PAL model).
"H" (NTSC model).

*19. "H" when input signal is NTSC3.58 mode (GA-PAL model).
"L" (Euro-PAL, NTSC model).

*20. Selected by "NTPB SW": "H" in NTSC3.58 position.

*21. Selected by "NTPB SW": "H" in NTSC3.58 or 4.43 position.

*22. "L" when input signal is NTSC mode, "HI-Z" in PAL/SECAM/MESECAM mode (GA-PAL, Euro-PAL model).
"L" (NTSC model).

*23. Selected by "Color system SW": "L" in NTSC mode, "HI-Z" in PAL/SECAM/MESECAM mode.

*24. Selected by "Color System SW": "L" in NTSC mode or PAL/SECAM/MESECAM – LP mode.
"HI-Z" in (PAL/SECAM/MESECAM) – SP mode.

*25. "H" during APC measurement.

*26. "L" during APC measurement.

*27. "H" when APC is off. "L" when APC is ON and "HG-tape" is used.

*28. "H" when APC is off or APc measurement is not done.

3-5. SYSTEM CONTROL – SERVO PERIPHERAL CIRCUIT INTERFACE

Signal	Pin No.	I/O	STOP	FF	REW	TAPE THREAD-ING	TAPE UNTHREAD-ING	PB	PB• PAUSE	SLOW	×2	CUE	REVIEW	REC	PEC• PAUSE	PB INDEX WRT/ERS
REC CTL	MA-144 IC203 ⑦	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	
$\overline{\text{CAP STOP}}$	MA-144 IC203 ㊳	O (O.D)	L	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	L	*3	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	
STEP PLS	MA-144 IC203 ㉔	O	L	L	L	L	L	L	L	*2	L	L	L	L	L	
CTL REC	MA-144 IC203 ㉘	O	L	L	L	L	L	L	L	L	L	L	L	H	H	H
INDEX	MA-144 IC203 ㉚	O	L	L	L	L	L	L	L	L	L	L	L	L	L	H
PB CTL	MA-144 IC203 (67)	I	H	*6	*6			*1	H/L	*2	*6	*6	*6	*1	H	
VD CTL	MA-144 IC203 (77)	I	H	*6	*6			*1	H/L	*2	*6	*6	*6	*1	H	
DRUM PG	MA-144 IC203 (68)	I	*4	*7	*7	*5	*5	*7	*7	*7	*7	*7	*7	*7	*7	
DRUM FG	MA-144 IC203 (69)	I	*4	*8	*8	*5	*5	*8	*8	*8	*8	*8	*8	*8	*8	
CAP FG	MA-144 IC203 (70)	I	H/L	*6	*6	*5	*5	*6	H/L	*9	*6	*6	*6	*6	H/L	
CAP RVS	MA-144 IC203 (72)	O	H/L	L	H	L	H	L	L	*2	L	L	H	L	L	
CAP DA	MA-144 IC203 (73)	O	*10	*10	*10	*10	*10	*11	*10	*10	*11	*11	*11	*11	*10	
DRUM DA	MA-144 IC203 (74)	O	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	
CTL STEP	MA-144 IC203 ㉙	O	L	L	L	L	L	L	L	*13	L	L	L	L	L	

*1. 30 Hz or 25 Hz pulse.
*2. Pulse at tape running.
*3. Reverse logic pulse of STEP PLS.
*4. "L" when drum rotation stop.
*5. Unstable period pulse.
*6. Pulse of period in proportion to tape speed.
*7. 30 Hz or 25 Hz pulse.
*8. 360 Hz or 300 Hz or 180/150 Hz pulse.
*9. Pulse at tape running.
*10. Approx. 2 msec period "H" or "L" pulse.
*11. Approx. 1.5 msec period "H" or "L" pulse.
*12. Approx. 3 msec period "H" or "L" pulse.
*13. "H" when FWD direction and STEP drive.

3-6. SYSTEM CONTROL – MECHANISM BLOCK INTERFACE

Signal	Pin No.	I/O	HI-SPEED REW	EJECTED	CASSETTE LOADING	CASSETTE UNLOAD-ING	TAPE THREAD-ING	TAPE UNTHREAD-ING	STOP	FF	REW	PB	PB• PAUSE	SLOW	×2	CUE	REVIEW	REC	PEC• PAUSE
CAM *1	MA-144 IC203 ⑫	O	L	L	L	L	H	H	L	L	L	L	L	L	L	L	L	L	L
LOAD	MA-144 IC203 ⑭	O	L	L	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L
CW/CCW	MA-144 IC203 ⑬	O			H	L	H	L											
MODE 1	MA-144 IC203 (58)	I	H	L	L	L	H	H	L	H	H	H	L	L	H	H	H	H	L
MODE 2	MA-144 IC203 (57)	I	L	H	H	H	H	H	L	L	L	L	H	H	L	L	L	L	H
MODE 3	MA-144 IC203 (56)	I	H	H	H	H	L	L	L	L	L	H	H	H	H	H	L	H	H
MODE 4	MA-144 IC203 (55)	I	H	H	H	H	H	H	L	H	H	L	L	L	L	L	L	L	L
REC PRF	MA-144 IC203 ⑮	I	*2	L	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
C-UP/DOWN	MA-144 IC203 ⑯	I	L	H	H→L	L→H	L	L	L	L	L	L	L	L	L	L	L	L	L
TREEL FG	MA-144 IC203 (64)	I	*3	H/L	H/L	H/L	H/L	H/L	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
SREEL FG	MA-144 IC203 (63)	I	*3	H/L	H/L	H/L	*3	*3	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
END LED	MA-144 IC203 ㉜	O (O.D)	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP TRQ 1	MA-144 IC203 ㉝	O (O.D)	*1							*1	*1			*6		*1	*1		
CAP TRQ 2	MA-144 IC203 ㉞	O (O.D)								*1	*1								
$\overline{\text{CAP STOP}}$	MA-144 IC203 ㊳	O (O.D)	H	L	L	L	H	H	L	H	H	H	L	*5	H	H	H	H	L
CAP RVS	MA-144 IC203 (72)	O	H	H			L	H	H/L	L	H	L	L	L/*5	L	L	H	L	L
CAP DA	MA-144 IC203 (73)	O																	
T SENS	MA-144 IC203 ⑰	I	*7	*4	*4	*4	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
S SENS	MA-144 IC203 ⑱	I	*7	*4	*4	*4	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7

*1. "H" when mechanism mode transition.
*2. "L" when erasing protection tab is bent, "H" when not bent.
*3. Pause of period in proportion to reel rotating speed.
*4. Approx. 2 msec period "H" pulse.
*5. Pulse at tape running.
*6. "L" when tape running and CAP RVS is "H".
*7. Normally "L". 2 msec period "H" pulse when tape top or tape end is detected.

3-7. SYSTEM CONTROL – SYSTEM CONTROL PERIPHERAL CIRCUIT INTERFACE

Signal	Pin No.	I/O	I/O level
$\overline{\text{COSMO•RESET}}$	MA-144 IC203 ㊵	I	Normally “H”. “L” when service interruption is detected or restored.
$\overline{\text{COSMO•CS}}$	MA-144 IC203 ㊹	I	Chip select signal from timer microprocessor. V period “L” pulse.
SI•BUS	MA-144 IC203 ㊺	I	Serial communication data from timer microprocessor. V period “L” pulse.
SO•BUS	MA-144 IC203 ㊻	O	Serial communication data to timer microprocessor. V period “L” pulse.
S CLK	MA-144 IC203 ㊼	I	Serial communication clock with timer microprocessor. V period “L” pulse.

3-8. SYSTEM CONTROL – AUDIO BLOCK INTERFACE

Signal	Pin No.	I/O	STOP/ FF/ REW	TAPE LOADING	TAPE UNLOAD-ING	PB	PB• PAUSE	SLOW	×2	CUE	REVIEW	REC	REC• PAUSE
AF PB	MA-144 IC203 (96)	O	L	L	L	H	H	H	H	H	H	H	L
STEREO/L/$\overline{\text{R}}$	MA-144 IC203 (84)	I/O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
$\overline{\text{HiFi}}$/M/N	MA-144 IC203 (83)	I/O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
AF ENVELOP	MA-144 IC203 (61)	I	AF RF envelope signal input terminal for automatic tracking.										
NA PB	MA-144 IC203 ⑪	O	L	L	L	H	H	H	H	H	H	L	L
A MUTE	MA-144 IC203 ㊲	O (O.D)	L	L	L	*4	H	H	H	H	H	L	L
$\overline{\text{SP}}$	MA-144 IC203 (91)	O	*2	*2	*2	*3	*3	*3	*3	*3	*2	*2	*2
NA REC•$\overline{\text{P}}$	MA-144 IC203 ⑩	O	L	L	L	L	L	L	L	L	L	H	L
AF REC•$\overline{\text{P}}$	MA-144 IC203 ④	O	L	L	L	L	L	L	L	L	L	H	L
AF SWP	MA-144 IC203 (100)	O	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
AF SW POSITION	MA-144 IC203 (51)	I	Input terminal for AF switching position adjustment.										
FULL $\overline{\text{ERS}}$	MA-144 IC203 ㊱	O (O.D)	H	H	H	H	H	H	H	H	H	L	H

*1. Selected by audio monitor.

Signal \ Audio Monitor	STEREO OR MAIN, SUB, L, R	MAIN L	SUB R	(NORMAL)	HiFi MIX
STEREO/L/$\overline{\text{R}}$	H	M (HI-Z)	L	X	H
$\overline{\text{HiFi}}$/M/N	L	L	L	H	M (HI-Z)

*2. Selected by REC mode selector. SP mode: “L”.

*3. Selected by tape recording mode. SP mode: “L”.

*4. 30 Hz or 25 Hz, 50% duty pulse approx. 5 msec delayed from RF SW P.

3-9. SYSTEM CONTROL – TUNER BLOCK INTERFACE

Signal	Pin No.	I/O	I/O level
TAMUTE	MA-144 IC203 ㉓	O	Tuner audio mute output. “H” when not used channel is selected.

3-10. SYSTEM CONTROL AND RF MODULATOR – INPUT SELECTION BLOCK INTERFACE

Signal	Pin No.	I/O	I/O level
AV CONT	MA-144 IC203 ⑲	O	“L” when RF modulator through.
LINE 1	MA-144 IC203 (79)	O	*1. Input select control signal.
LINE 2	MA-144 IC203 (82)	O	

*1.

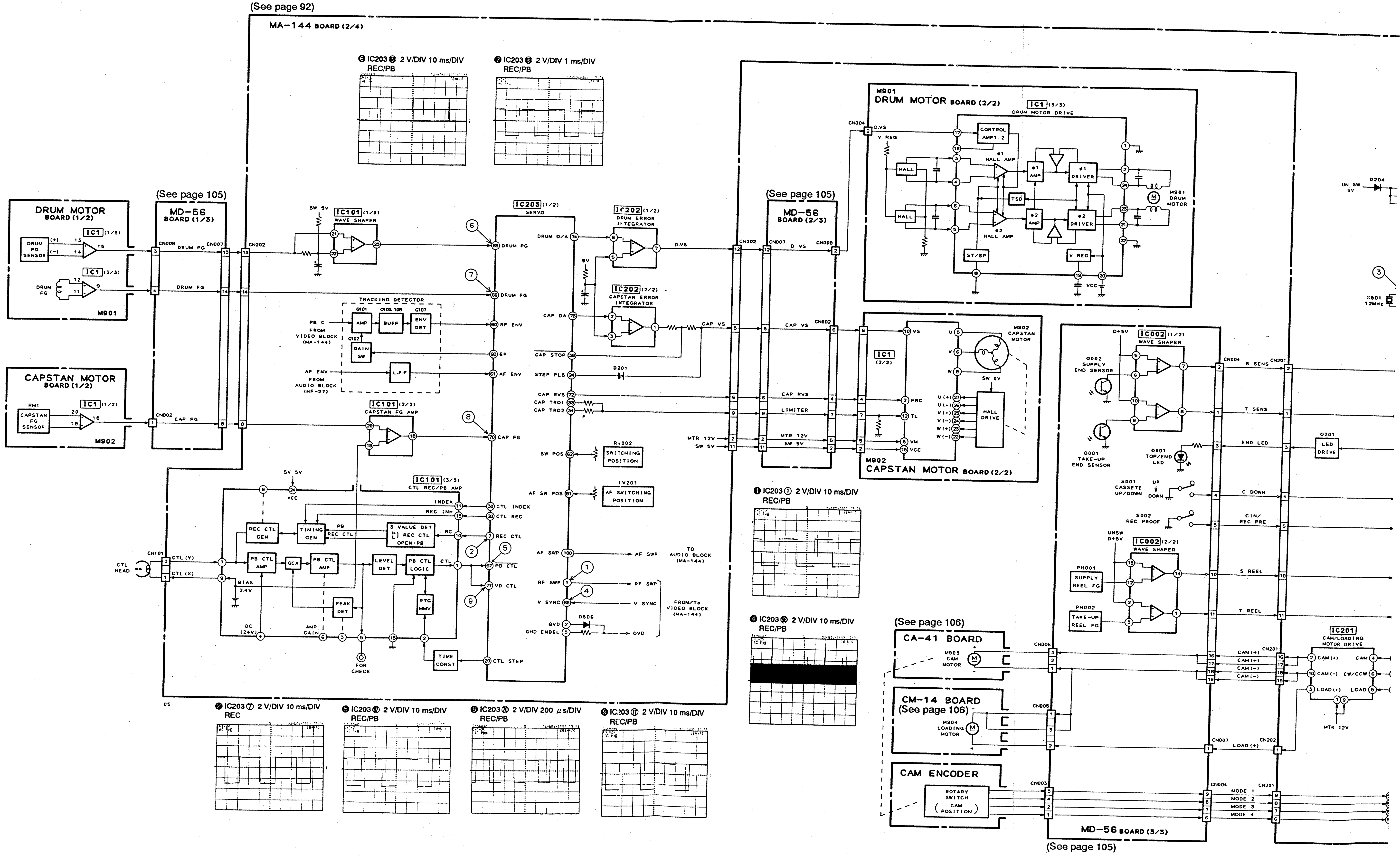
Signal \ Input	Tuner	LINE 1	LINE 2
LINE 1 (79)	L	H	L
LINE 2 (82)	L	L	H

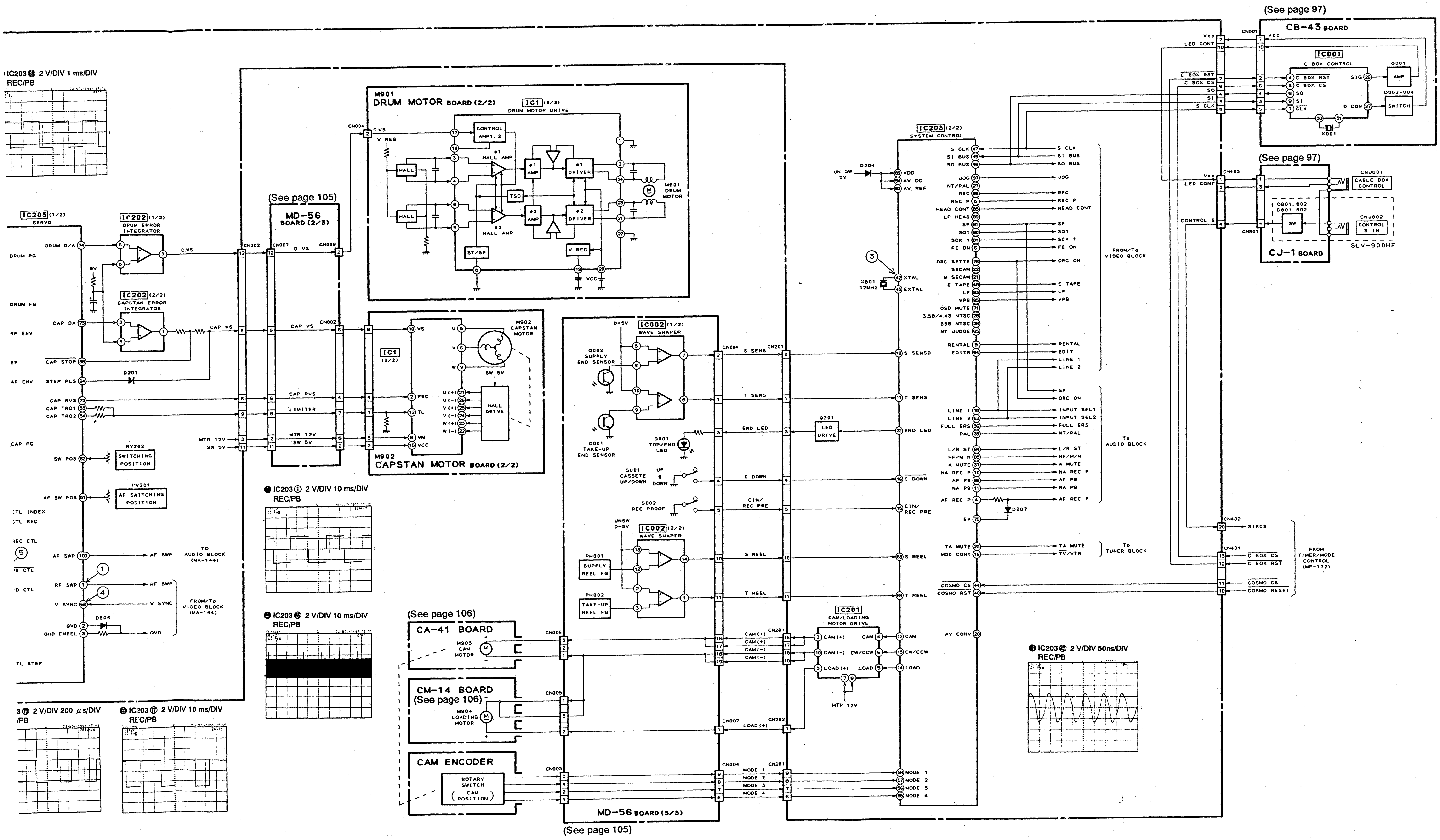
3-11. SERVO SYSTEM CONTROL – MICROPROCESSOR PIN FUNCTION (MA-144 BOARD IC203)

Pin No.	Port	I/O	Signal	Function
1	PB5/PPO13	O	RF SWP	Video switching pulse output
2	PB4/PPO12	O	Q VD	False VD pulse output
3	PB3/PPO11	O	Q HD ENBL	False HD voltage level control
4	PB2/PPO10	O	AF REC $\overline{\text{P}}$	"H" output when hi-fi audio REC
5	PB1/PPO9	O	RECP	"H" output when video REC•PAUSE
6	PB0/PPO8	O	FE ON	Flaying erase ON/OFF
7	PC7/RTO7	O	REC CTL	REC CTL output
8	PC6/RTO6	O	INT VD	Internal VD signal. Not used
9	PC5/RTO5	O	RENTAL	"H" output when "RENTAL" or "Low grade TAPE" PB
10	PC4/RTO4	O	NA REC$\overline{\text{P}}$	"H" when normal audio REC
11	PC3/RTO3	O	NA PB	"H" when normal audio playback
12	PC2/PPO18	O	CAM	CAM motor select
13	PC1/PPO17	O	CW	Clockwise/counterclockwise signal output
14	PC0/PPO16	O	LOAD	Load motor select
15	PJ7	I	CIN/REC PRF	Erasing protection tab, cassette IN detection input
16	PJ6	I	C DOWN	Cassette up/down detection input
17	PJ5	I	T SENS	T end sensor input
18	PJ4	I	S SENS	S end sensor input
19	PJ3	O	MOD CONT	RF modulator ON/OFF control
20	PJ2	O	AV CONT	Euro 21pin TV/VTR control
21	PJ1	I/O	MESECAM	"L" in NT mode. "HI-Z" in PAL (50 Hz) mode
22	PJ0	I/O	SECAM	"L" in NT mode. "HI-Z" in PAL (50 Hz) mode
23	PD7	O	TA MUTE	Tuner audio MUTE signal
24	PD6	O	STEP PLS	"H" when capstan step drive
25	PD5	O	3.58/4.43 NTSC	"H" when 3.58 or 4.43 NTSC PB
26	PD4	O	3.58 NTSC	"H" when 3.58 NTSC PB
27	PD3	O	NTSC/$\overline{\text{PAL}}$	"H" when NTSC mode
28	PD2	O	CTL REC	"H" when CTR writing
29	PD1	O	CTL STEP	STEP motion control of CTL amp
30	PD0	O	INDEX	Index control. "H" when playback index writing or erasing
31	PH7	O		Not used
32	PH6	O	END LED	END sensor lamp drive output
33	PH5	O	CAP TPQ2	Capstan current control. "L" when FF/REW ➡ stop
34	PH4	O	CAP TPQ1	Capstan current control. "L" when slow down
35	PH3	O	PAL	"H" when PAL mode
36	PH2	O	$\overline{\text{FULL ERS}}$	"L" when full erase head operation
37	PH1	O	A MUTE	Audio MUTE output
38	PH0	O	$\overline{\text{CAP STOP}}$	Capstan STOP signal output
39	MP	I	MP	Fixed at "L" level
40	$\overline{\text{RST}}$	I	$\overline{\text{COSMO RST}}$	System reset input
41	Vss			GND
42	XTAL		XTAL	System clock 12 MHz
43	EXTAL		EXTAL	
44	$\overline{\text{CS0}}$	I	$\overline{\text{COSMO CS}}$	Chip select signal
45	SI0	I	SI0	Signal for serial communication
46	SO0	O	SO0	
47	$\overline{\text{SCK0}}$	I	$\overline{\text{SCK0}}$	
48	PF7/AN11	O	AMS MUTE	Not used
49	PF6/AN10	O	E TAPE	"H" when "HG-TAPE" PB

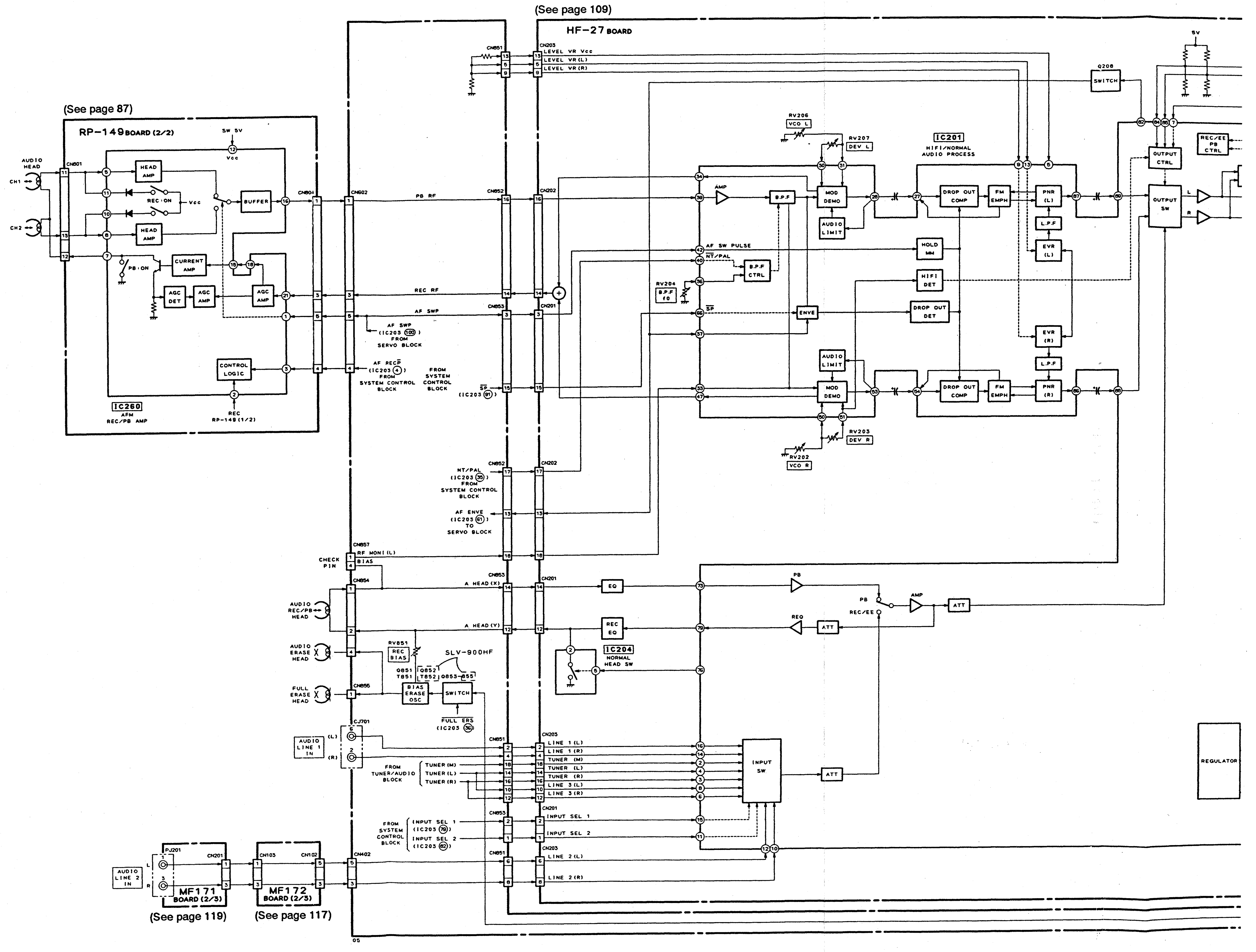
Pin No.	Port	I/O	Signal	Function
50	PF5/AN9	I	K MODE	Not used
51	PF4/AN8	I	AF SW POSI	VR input for hi-fi switching pulse position adjustment
52	AVss		AVss	GND
53	AVREF		AVREF	AD port reference input. UNSW 5 V
54	AVDD		AVDD	UNSW 5 V
55	PF3/AF7	I	MODE4	Mechanism section CAM encoder input
56	PF2/AN6	I	MODE3	
57	PF1/AN5	I	MODE2	
58	PF0/AN4	I	MODE1	
59	AN3	I	DEW	DEW sensor input
60	AN2	I	RF ENV	Video RF envelope input
61	AN1	I	AF ENV	hi-fi audio RF envelope input
62	AN0	I	RF SW POSI	VR input for SWP adjustment
63	PG7/EXI1	I	SREEL FG	S reel sensor input
64	PG6/EXI0	I	TREEL FG	T reel sensor input
65	PG5/SYNC1	I	NT JUDGE	3.58/4.43 NTSC judgement input
66	PG4/SYNC0	I	V SYNC	Composite sync input
67	PG3/$\overline{\mathrm{PBCTL}}$	I	PB CTL	Playback CTL input
68	PG2/DPG	I	DRM PG	Drum PG input
69	PG1/DFG	I	DRM FG	Drum FG input
70	PG0/CFG	I	CAP FG	Capstan FG input
71	PE7/DAB1	O	OSD MUTE	Video putput mute signal
72	PE6/DAB0	O	CAP RVS	Capstan reverse signal output
73	PE5/DAA1	O	CAP D/A	Capstan error D/A output
74	PE4/DAA0	O	DRM D/A	Drum error D/A output
75	PE3/PWM1	O	$\overline{\mathrm{EP}}$	"L" when EP mode REC/PB
76	PE2/PWM0	O	ORC SETTEI	"H" when ORC measurement
77	PE1/EC/INT	I	VD CTL	Playback CTL input
78	PE0/INT0	I	AMS IN	Not used
79	PI7/SIL	O	LINE1	Video/audio input select signal
80	PI6/SOL	O	EXP SO	Expansion port serial communication
81	PI5/$\overline{\mathrm{SCKL}}$	O	EXP CLK	
82	PI4/INT1	O	LINE2	Video/audio input select signal
83	PI3/TO	I/O	Hi/$\overline{\mathrm{Fi}}$/M/N	Audio output control signal
84	PI2/PWM	I/O	STEREO/L/$\overline{\mathrm{R}}$	
85	PI1/PO	I/O	HEAD CONT	Head select control
86	TEX	I		Not used
87	TX	O		Not used
88	Vss			GND
89	VDD			UNSW 5 V
90	N.C.			Connected to UNSW 5 V
91	PA7/PPO7	O	$\overline{\mathrm{SP}}$	"L" when SP mode
92	PA6/PPO6	O	ENV GAIN	RF envelope gain control
93	PA5/PPO5	O	LP	"H" when LP mode
94	PA4/PPO4	O	EDIT	"H" when EDIT
95	PA3/PPO3	O	$\overline{\mathrm{V\ PB}}$	"L" when video playback
96	PA2/PPO2	O	AF PB	"H" when hi-fi audio playback
97	PA1/PPO1	O	JOG	"H" when trick play mode
98	PA0/PPO0	O	REC	Rise up signal of head amp recording power
99	PB7/PPO15	O	LP HEAD	(PAL) Head select control
100	PB6/PPO14	O	AF SWP	hi-fi switching pulse output

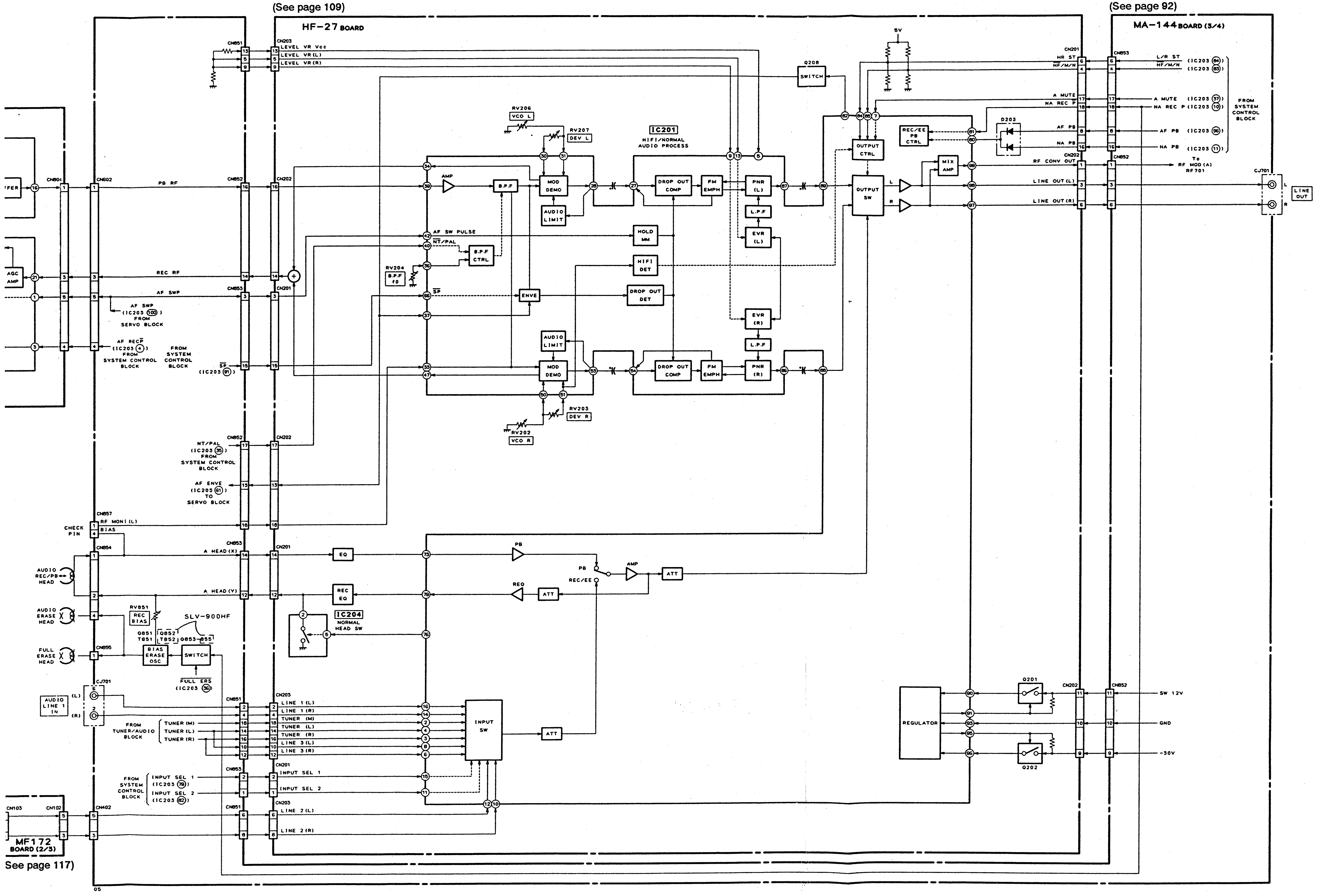
3-12. SERVO, SYSTEM CONTROL BLOCK DIAGRAM


(See page 92)
MA-144 BOARD (2/4)
⑥ IC203 ⑱ 2 V/DIV 10 ms/DIV REC/PB
⑦ IC203 ⑱ 2 V/DIV 1 ms/DIV REC/PB
DRUM MOTOR BOARD (1/2)
IC1 (1/3)
DRUM PG SENSOR
IC1 (2/3)
DRUM FG
M901
(See page 105)
MD-56 BOARD (1/3)
CN009
CN007
DRUM PG
DRUM FG
CAP FG
CN002
CN202
CAPSTAN MOTOR BOARD (1/2)
RM1
CAPSTAN FG SENSOR
IC1 (1/2)
M902
SW 5V
IC101 (1/3) WAVE SHAPER
IC203 (1/2) SERVO
DRUM PG
DRUM FG
RF ENV
EP
AF ENV
CAP FG
TRACKING DETECTOR
Q101 Q103, 105 Q107
AMP BUFF ENV DET
Q102
GAIN SW
L.P.F
PB C FROM VIDEO BLOCK (MA-144)
AF ENV FROM AUDIO BLOCK (HF-27)
IC101 (2/3) CAPSTAN FG AMP
DRUM D/A
CAP DA
CAP STOP
STEP PLS
CAP RVS
CAP TRQ1
CAP TRQ2
SW POS
AF SW POS
AF SWP
RF SWP
V SYNC
OVD
OHD ENBEL
IC202 (1/2) DRUM ERROR INTEGRATOR
IC202 (2/2) CAPSTAN ERROR INTEGRATOR
8V
D201
D.VS
CAP VS
RV202 SWITCHING POSITION
RV201 AF SWITCHING POSITION
TO AUDIO BLOCK (MA-144)
FROM/TO VIDEO BLOCK (MA-144)
D506
MTR 12V
SW 5V
IC101 (3/3) CTL REC/PB AMP
5V 5V
VCC
INDEX
REC INH
CTL INDEX
CTL REC
REC CTL
PB CTL
VD CTL
CTL STEP
CTL HEAD
CN101
CTL (Y)
CTL (X)
BIAS 24V
DC (24V)
REC CTL GEN
TIMING GEN
PB
REC CTL
3 VALUE DET H L REC CTL OPEN PB
RC
PB CTL AMP
GCA
PB CTL AMP
LEVEL DET
PB CTL LOGIC
PEAK DET
RTG MMV
AMP GAIN
FOR CHECK
TIME CONST
② IC203 ⑦ 2 V/DIV 10 ms/DIV REC
⑤ IC203 ㊷ 2 V/DIV 10 ms/DIV REC/PB
⑧ IC203 ⑩ 2 V/DIV 200 µs/DIV REC/PB
⑨ IC203 ⑰ 2 V/DIV 10 ms/DIV REC/PB
① IC203 ① 2 V/DIV 10 ms/DIV REC/PB
④ IC203 ⑯ 2 V/DIV 10 ms/DIV REC/PB
(See page 105)
MD-56 BOARD (2/3)
CN007 CN009
D VS
CAP VS
CAP RVS
LIMITER
MTR 12V
SW 5V
M901 DRUM MOTOR BOARD (2/2)
IC1 (3/3) DRUM MOTOR DRIVE
CN004
D.VS
V REG
CONTROL AMP1, 2
HALL
#1 HALL AMP
#1 AMP
#1 DRIVER
TSD
#2 AMP
#2 DRIVER
#2 HALL AMP
ST/SP
V REG
VCC
M901 DRUM MOTOR
IC1 (2/2)
VS
FRC
TL
VM
VCC
U V W
U(+) U(-) V(+) V(-) W(+) W(-)
HALL DRIVE
SW 5V
M902 CAPSTAN MOTOR
M902 CAPSTAN MOTOR BOARD (2/2)
D+5V
IC002 (1/2) WAVE SHAPER
Q002 SUPPLY END SENSOR
Q001 TAKE-UP END SENSOR
D001 TOP/END LED
S001 CASSETE UP/DOWN
UP DOWN
S002 REC PROOF
UNSW D+5V
IC002 (2/2) WAVE SHAPER
PH001 SUPPLY REEL FG
PH002 TAKE-UP REEL FG
CN004 CN201
S SENS
T SENS
END LED
C DOWN
CIN/ REC PRE
S REEL
T REEL
Q201 LED DRIVE
(See page 106)
CA-41 BOARD
M903 CAM MOTOR
CN006
CAM(+) CAM(+) CAM(-) CAM(-)
IC201 CAM/LOADING MOTOR DRIVE
CAM(+) CAM(-) CW/CCW LOAD(+) LOAD
MTR 12V
CM-14 BOARD (See page 106)
M904 LOADING MOTOR
CN005
CN007 CN202
LOAD(+)
CAM ENCODER
CN003
ROTARY SWITCH (CAM POSITION)
MODE 1 MODE 2 MODE 3 MODE 4
MD-56 BOARD (3/3)
(See page 105)
D204
UN SW 5V
X501 12MHz


IC203 ⑱ 2 V/DIV 1 ms/DIV
REC/PB
IC203 (1/2)
SERVO
DRUM D/A
DRUM PG
DRUM FG
CAP DA
RF ENV
EP
CAP STOP
STEP PLS
AF ENV
CAP RVS
CAP TRQ1
CAP TRQ2
CAP FG
SW POS
AF SW POS
CTL INDEX
CTL REC
REC CTL
PB CTL
CD CTL
AF SWP
RF SWP
V SYNC
OVD
OHD ENBEL
CTL STEP
IC202 (1/2)
DRUM ERROR INTEGRATOR
IC202 (2/2)
CAPSTAN ERROR INTEGRATOR
D.VS
CAP VS
D201
RV202
SWITCHING POSITION
RV201
AF SWITCHING POSITION
TO AUDIO BLOCK (MA-144)
FROM/TO VIDEO BLOCK (MA-144)
D506
MTR 12V
SW 5V
CN202
CN007
CN009
CN002
D VS
CAP RVS
LIMITER
MTR 12V
(See page 105)
MD-56
BOARD (2/3)
M901
DRUM MOTOR BOARD (2/2)
IC1 (1/2)
DRUM MOTOR DRIVE
CN004
V REG
CONTROL AMP1, 2
φ1 HALL AMP
φ2 HALL AMP
HALL
φ1 AMP
φ2 AMP
φ1 DRIVER
φ2 DRIVER
TSD
ST/SP
VCC
M901 DRUM MOTOR
M902 CAPSTAN MOTOR
IC1 (2/2)
VS
FRC
TL
VM
VCC
U(+) U(−) V(+) V(−) W(+) W(−)
HALL DRIVE
SW 5V
M902
CAPSTAN MOTOR BOARD (2/2)
IC203 ① 2 V/DIV 10 ms/DIV
REC/PB
IC203 ⑯ 2 V/DIV 10 ms/DIV
REC/PB
IC203 ⑱ 2 V/DIV 200 µs/DIV
REC/PB
IC203 ⑰ 2 V/DIV 10 ms/DIV
REC/PB
IC002 (1/2)
WAVE SHAPER
D+5V
Q002 SUPPLY END SENSOR
Q001 TAKE-UP END SENSOR
D001 TOP/END LED
S001 CASSETE UP/DOWN
S002 REC PROOF
UP
DOWN
UNSW D+5V
IC002 (2/2)
WAVE SHAPER
PH001 SUPPLY REEL FG
PH002 TAKE-UP REEL FG
(See page 106)
CA-41 BOARD
M903 CAM MOTOR
CM-14 BOARD
(See page 106)
M904 LOADING MOTOR
CAM ENCODER
ROTARY SWITCH
(CAM POSITION)
CN006
CN005
CN003
MD-56 BOARD (3/3)
(See page 105)
CN004
CN201
S SENS
T SENS
END LED
C DOWN
CIN/REC PRE
S REEL
T REEL
CAM (+)
CAM (−)
LOAD (+)
MODE 1
MODE 2
MODE 3
MODE 4
Q201 LED DRIVE
IC201
CAM/LOADING MOTOR DRIVE
CAM (+) CAM (−) LOAD (+)
CAM CW/CCW LOAD
MTR 12V
IC203 (2/2)
SYSTEM CONTROL
UN SW 5V
D204
VDD
AV DD
AV REF
X501 12MHz
XTAL
EXTAL
S SENSD
T SENS
END LED
C DOWN
CIN/REC PRE
EP
S REEL
T REEL
CAM
CW/CCW
LOAD
AV CONV
MODE 1
MODE 2
MODE 3
MODE 4
S CLK
SI BUS
SO BUS
JOG
NT/PAL
REC
REC P
HEAD CONT
LP HEAD
SP
SO1
SCK 1
FE ON
ORC SETTE
SECAM
M SECAM
E TAPE
LP
VPB
OSD MUTE
3.58/4.43 NTSC
358 NTSC
NT JUDGE
RENTAL
EDIT8
LINE 1
LINE 2
FULL ERS
PAL
L/R ST
HF/M N
A MUTE
NA REC P
AF PB
NA PB
AF REC P
D207
TA MUTE
MOD CONT
COSMO CS
COSMO RST
FROM/To VIDEO BLOCK
To AUDIO BLOCK
To TUNER BLOCK
EDIT
ORC ON
INPUT SEL1
INPUT SEL2
NT/PAL
TV/VTR
(See page 97)
CB-43 BOARD
CN001
Vcc
LED CONT
C BOX RST
C BOX CS
SO
SI
S CLK
IC001
C BOX CONTROL
SIG
D CON
Q001 AMP
Q002-004 SWITCH
X001
(See page 97)
CN403
CONTROL S
CN801
CNJ801 CABLE BOX CONTROL
CNJ802 CONTROL S IN
Q801, 802
D801, 802
SW
SLV-900HF
CJ-1 BOARD
CN402
SIRCS
CN401
C BOX CS
C BOX RST
COSMO CS
COSMO RESET
FROM TIMER/MODE CONTROL (MF-172)
IC203 ㊷ 2 V/DIV 50ns/DIV
REC/PB

3-13. AUDIO BLOCK DIAGRAM


(See page 87)
RP-149 BOARD (2/2)
AUDIO HEAD
CH1
CH2
CN801
SW 5V
Vcc
HEAD AMP
REC : ON
BUFFER
PB : ON
CURRENT AMP
AGC DET
AGC AMP
CONTROL LOGIC
IC260
AFM REC/PB AMP
REC RP-149 (1/2)
CN804
CN602
PB RF
REC RF
AF SWP
AF SWP (IC203 (100)) FROM SERVO BLOCK
AF RECP̄ (IC203 ④) FROM SYSTEM CONTROL BLOCK
FROM SYSTEM CONTROL BLOCK
S̄P̄ (IC203 (91))
NT/PAL (IC203 (35)) FROM SYSTEM CONTROL BLOCK
AF ENVE (IC203 (61)) TO SERVO BLOCK
(See page 109)
HF-27 BOARD
CN851
CN203
LEVEL VR Vcc
LEVEL VR (L)
LEVEL VR (R)
CN852
CN202
CN853
CN201
AMP
B.P.F
AF SW PULSE
N̄T̄/PAL
B.P.F CTRL
RV204 B.P.F f0
S̄P̄
ENVE
RV206 VCO L
RV207 DEV L
RV203 DEV R
RV202 VCO R
MOD DEMO
AUDIO LIMIT
IC201
HIFI/NORMAL AUDIO PROCESS
DROP OUT COMP
FM EMPH
PNR (L)
PNR (R)
L.P.F
EVR (L)
EVR (R)
HOLD MM
HIFI DET
DROP OUT DET
Q208 SWITCH
5V
OUTPUT CTRL
REC/EE PB CTRL
OUTPUT SW
L
R
CN857
RF MONI (L)
BIAS
CHECK PIN
CN854
AUDIO REC/PB HEAD
A HEAD (X)
A HEAD (Y)
AUDIO ERASE HEAD
RV851 REC BIAS
SLV-900HF
Q851 T851
Q852 T852
Q853-855
CN855
FULL ERASE HEAD
BIAS ERASE OSC
SWITCH
F̄ŪL̄L̄ ĒR̄S̄ (IC203 (36))
EQ
REC EQ
IC204
NORMAL HEAD SW
PB
REQ
AMP
REC/EE
ATT
CJ701
AUDIO LINE 1 IN
(L)
(R)
FROM TUNER/AUDIO BLOCK
TUNER (M)
TUNER (L)
TUNER (R)
LINE 1 (L)
LINE 1 (R)
LINE 3 (L)
LINE 3 (R)
FROM SYSTEM CONTROL BLOCK
INPUT SEL 1 (IC203 (78))
INPUT SEL 2 (IC203 (82))
INPUT SEL 1
INPUT SEL 2
LINE 2 (L)
LINE 2 (R)
INPUT SW
REGULATOR
AUDIO LINE 2 IN
PJ201
MF171 BOARD (2/3)
(See page 119)
CN103
CN102
MF172 BOARD (2/3)
(See page 117)
CN402
05


(See page 109)
HF-27 BOARD
(See page 92)
MA-144 BOARD (3/4)
CN203
LEVEL VR Vcc
LEVEL VR (L)
LEVEL VR (R)
CN851
Q208
SWITCH
5V
CN201
HR ST
HF/M/N
A MUTE
NA REC P
AF PB
NA PB
CN202
RF CONV OUT
LINE OUT (L)
LINE OUT (R)
CN853
L/R ST (IC203 84)
HF/M/N (IC203 83)
A MUTE (IC203 37)
NA REC P (IC203 10)
AF PB (IC203 86)
NA PB (IC203 11)
FROM SYSTEM CONTROL BLOCK
CN852
To RF MOD (A) RF701
CJ701
LINE OUT
L
R
RV206
VCO L
RV207
DEV L
IC201
HIFI/NORMAL AUDIO PROCESS
REC/EE PB CTRL
D203
OUTPUT CTRL
OUTPUT SW
MIX AMP
AMP
B.P.F
MOD DEMO
AUDIO LIMIT
DROP OUT COMP
FM EMPH
PNR (L)
L.P.F
EVR (L)
HOLD MM
HIFI DET
DROP OUT DET
EVR (R)
PNR (R)
AF SW PULSE
NT/PAL
B.P.F CTRL
RV204
B.P.F f0
SP
ENVE
RV203
DEV R
RV202
VCO R
CN804
CN602
PB RF
CN852
CN202
AGC AMP
REC RF
AF SWP
CN853
AF SWP (IC203 100) FROM SERVO BLOCK
AF RECP (IC203 4) FROM SYSTEM CONTROL BLOCK
FROM SYSTEM CONTROL BLOCK
SP (IC203 91)
NT/PAL (IC203 35) FROM SYSTEM CONTROL BLOCK
AF ENVE (IC203 61) TO SERVO BLOCK
CN857
RF MONI (L)
BIAS
CHECK PIN
CN854
A HEAD (X)
A HEAD (Y)
AUDIO REC/PB HEAD
AUDIO ERASE HEAD
FULL ERASE HEAD
RV851
REC BIAS
SLV-900HF
Q851 T851
Q852 T852
Q853-855
BIAS ERASE OSC
SWITCH
CN855
FULL ERS (IC203 36)
EQ
REC EQ
IC204
NORMAL HEAD SW
PB
REC
AMP
ATT
PB
REC/EE
CJ701
AUDIO LINE 1 IN
(L)
(R)
FROM TUNER/AUDIO BLOCK
LINE 1 (L)
LINE 1 (R)
TUNER (M)
TUNER (M)
TUNER (L)
TUNER (R)
LINE 3 (L)
LINE 3 (R)
INPUT SW
ATT
FROM SYSTEM CONTROL BLOCK
INPUT SEL 1 (IC203 79)
INPUT SEL 2 (IC203 82)
CN102
CN103
CN402
LINE 2 (L)
LINE 2 (R)
MF172 BOARD (2/3)
See page 117)
REGULATOR
Q201
Q202
SW 12V
GND
-30V
05

3-14. TIMER, TUNER MODE CONTROL MICROCOMPUTER PIN FUNCTION (MF-172 BOARD IC101 MB89905-VSX1910)

No.	Port Name	I/O	Signal Name	Contents
1	CL1		32K X'tal	Connect oscillator for clock
2	CL0		32K X'tal	Connect oscillator for clock
3	MOD0		GND	
4	MOD1		GND	
5	X0		X'tal	Connect main oscillator
6	X1		X'tal	Connect main oscillator
7	Vss		GND	
8	XRST	I	$\overline{\text{RESET}}$	Reset signal input
9	P00/E120	O	PLL ENABLE	Tuner enable signal
10	P01/E121	O	PLL DATA	Tuner data signal
11	P02/E122	O	PLL CLOCK	Tuner clock signal
12	P03/E123	O	$\overline{\text{C-BOX CS}}$	C-BOX chip select
13	P04/E124	O	$\overline{\text{C-BOX RESET}}$	C-BOX reset
14	P05/E125	O	$\overline{\text{COSMO CS}}$	System control chip select signal
15	P06/E126	O	$\overline{\text{COSMO RESET}}$	System control reset signal
16	P07/E127	O	$\overline{\text{CG CS}}$	Character generator chip select signal
17	P10/E110	I	$\overline{\text{POWER FAIL}}$	Power failure detect signal input
18	P11/E111	I	$\overline{\text{V SYNC}}$	V sync. signal input
19	P12/E112	I	H DET	Video signal detect signal input
20	P13/E113	I	C+ DET	Not used
21	P14	O	C+ DATA	Not used
22	P15	O	C+ CLK	Not used
23	P16	I	$\overline{\text{STEREO}}$	Tuner audio mode input
24	P17	I	$\overline{\text{BILINGUAL}}$	Tuner audio mode input
25	P20	O	$\overline{\text{STEREO}}$	Stereo, bilingual, HiFi LED
26	P21	O	$\overline{\text{TIMER}}$	TIMER LED
27	P22	O	$\overline{\text{REC}}$	REC LED
28	CMOD		GND	
29	P24/SI0	O	FF	FF LED
30	P25/SO0	O	FWD	FWD LED
31	P26/SCLK0	O	PAUSE	PAUSE LED
32	P27/RMCI	I	SIRCS IN	SIRCS signal input
33	P30	O	RVS	RVS LED
34	P31	O	REW	REW LED
35	P32	O	H. S. REW	H. S. REW LED

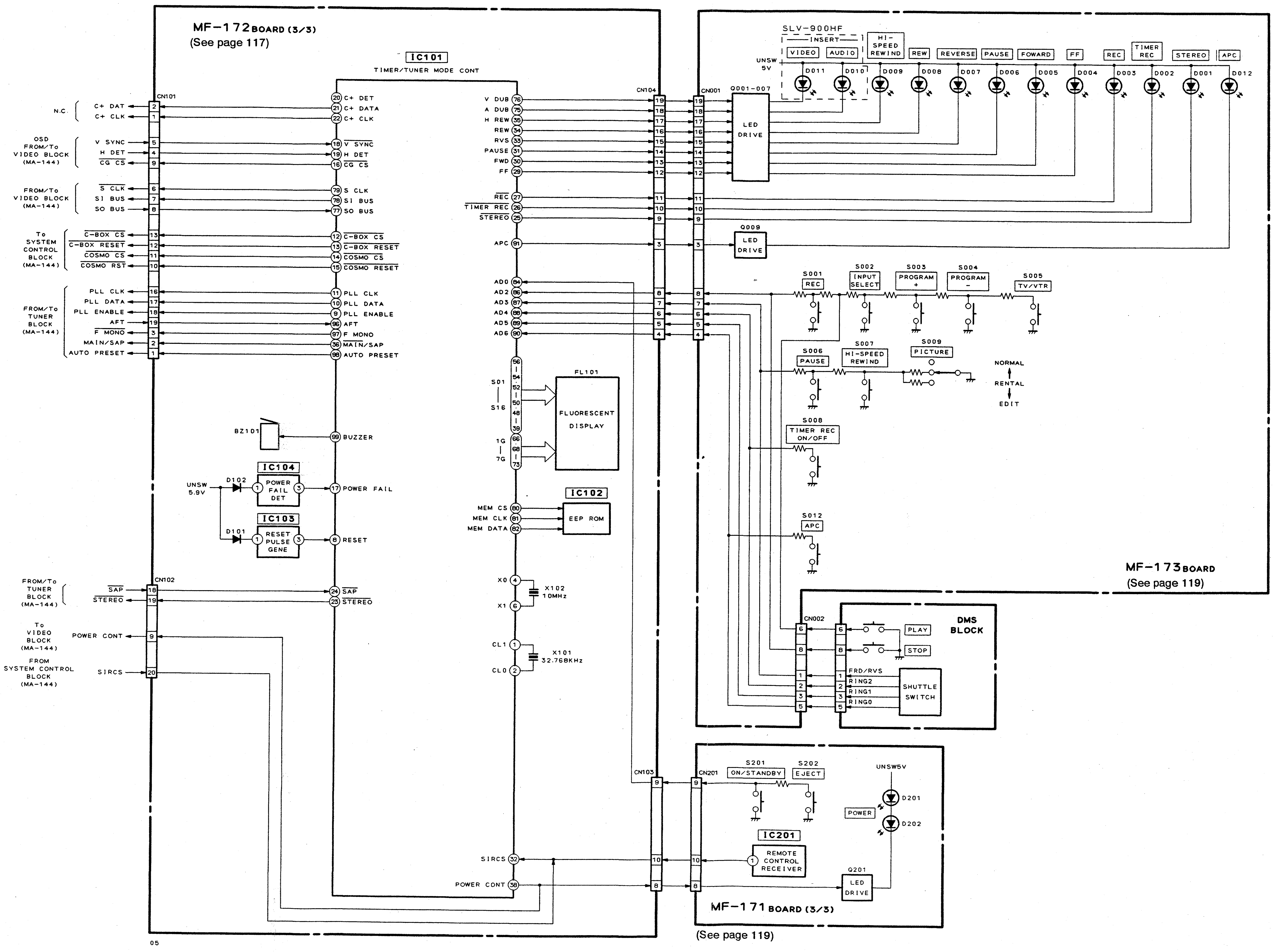
No.	Port Name	I/O	Signal Name	Contents
36	P33/PWMO	O	SAP/$\overline{\text{MAIN}}$	Normal audio SAP/MAIN select
37	P34/PPGO	O	N. C.	
38	P35/PPGI	O	POWER CONT	Power ON/OFF control signal
39	FS00	O	S16	FDP Segment 16
40	FS01	O	S15	FDP Segment 15
41	FS02	O	S14	FDP Segment 14
42	FS03	O	S13	FDP Segment 13
43	FS04	O	S12	FDP Segment 12
44	FS05	O	S11	FDP Segment 11
45	FS06	O	S10	FDP Segment 10
46	FS07	O	S09	FDP Segment 9
47	FS08	O	S08	FDP Segment 8
48	FS09	O	S07	FDP Segment 7
49	Vcc	O	5V	
50	FS10	O	S06	FDP Segment 6
51	FS11	O	S05	FDP Segment 5
52	FS12	O	S04	FDP Segment 4
53	Vfdp		−30V	
54	FS13	O	S03	FDP Segment 3
55	FS14	O	S02	FDP Segment 2
56	FS15	O	S01	FDP Segment 1
57	FS16		N. C.	
58	Vss		GND	
59	FS17		N. C.	
60	FS18		N. C.	
61	FS19		N. C.	
62	FC10/FS20		N. C.	
63	FC10/FS21		N. C.	
64	FC09/FS22		N. C.	
65	FC08/FS23		N. C.	
66	FC07	O	1G	FDP Grid 1
67	Vcc		5V	
68	FC06	O	2G	FDP Grid 2
69	FC05	O	3G	FDP Grid 3
70	FC04	O	4G	FDP Grid 4

No.	Port Name	I/O	Signal Name	Contents
71	FC03	O	5G	FDP Grid 5
72	FC02	O	6G	FDP Grid 6
73	FC01	O	7G	FDP Grid 7
74	FC00		N. C.	
75	P80/STB	O	A INSERT	A INSERT LED
76	P81/XCS	O	V INSERT	V INSERT LED (SLV-900HF)
77	P82/SI1	I	SO BUS	Serial data input
78	P83/SO1	O	SI BUD	Serial data input
79	P84/SCLK1	O	S CLK	Clock for serial communication
80	P85/ECK	O	MEM CS	E²PROM chip seelct signal
81	P86/T01	O	MEM CLK	E²PROM clock
82	P87/T02	O	MEM DATA	E²PROM data
83	AVss		GND	
84	P90/AN00	I	A/D0	Key reading A/D input
85	P91/AN01	I	A/D1	Key reading A/D input
86	P92/AN02	I	A/D2	Key reading A/D input
87	P93/AN03	I	A/D3	Key reading A/D input
88	P94/AN04	I	A/D4	Key reading A/D input
89	P95/AN05	I	A/D5	Key reading A/D input
90	P96/AN06	I	A/D6	Key reading A/D input
91	P97/AN07	O	APC	APC LED
92	AVcc		5V	
93	PA0/AN08		N. C.	
94	PA1/AN09		DEST1	Destination discriminating A/D input
95	PA2/AN10	I	DEST2	Destination discriminating A/D input
96	PA3/AN11	I	AFT	Tuner AFT input
97	PA4/LSI	O	F MONO	Tuner audio select control
98	PA5/LSO	O	AUTO RESET	Automatic preset sensitivity select
99	PA6/COUT	O	BUZZER	Buzzer output
100	Vcc		5V	

A/D Port Assignment

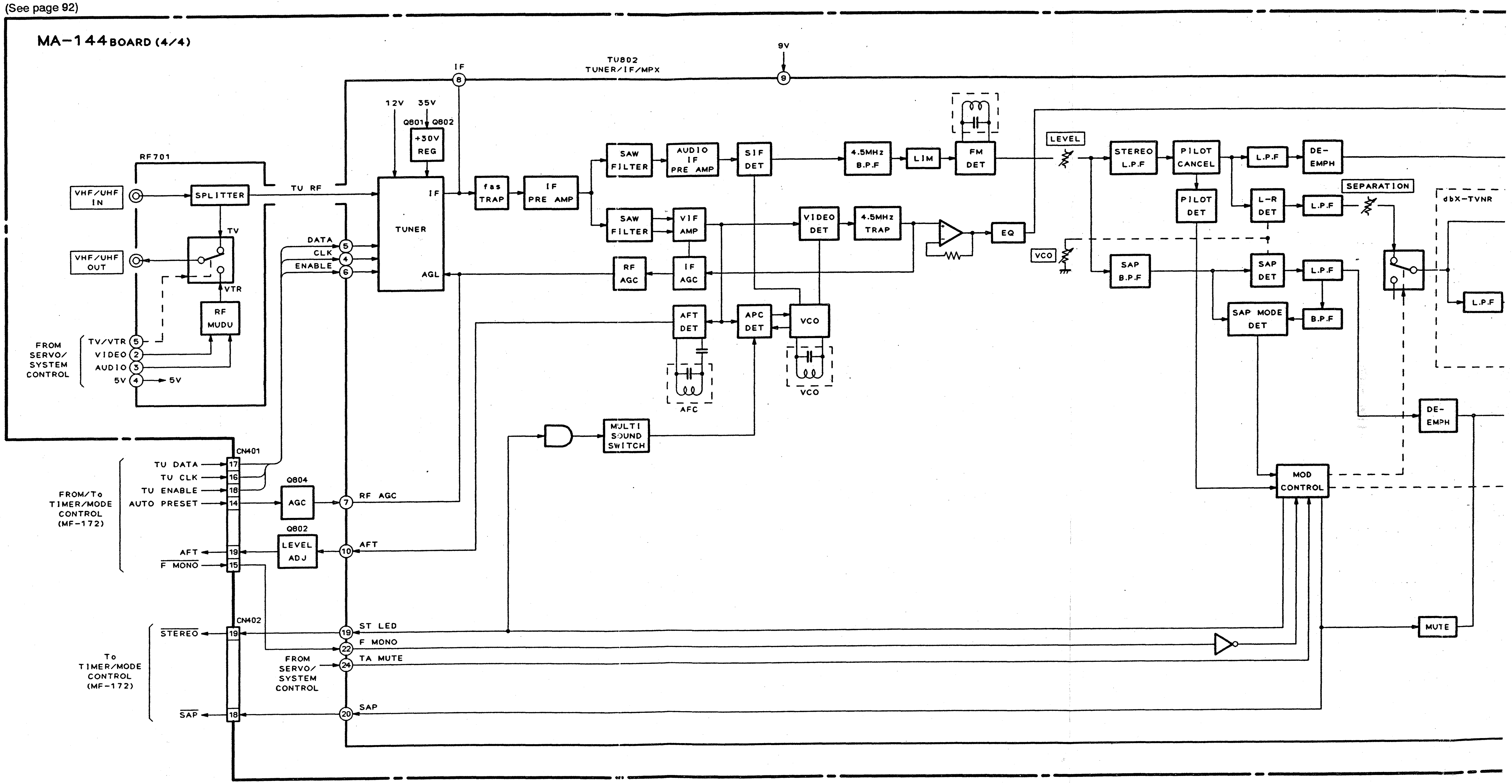
Level / Port	SW0	SW1	SW2	SW3	SW4	SW5	SW6
AN00	POWER	EJECT					
AN01							
AN02	STOP	REC	PLAY	INPUT SEL	PROGRAM (+)	PROGRAM (−)	TV/VTR
AN03	FWD/RVS	PAUSE	H. S. REW			EDIT	RENTAL
AN04	RING2	TIMER REC ON/OFF			COLOR SEL0	COLOR SEL1	COLOR SEL2
AN05	RING1					NTSC PB SEL0	NTSC PB SEL1
AN06	RING0	TEST	X120 (TEST)		APC		
AN07							
AN08							
AN09	DESTINATION						
AN10							
AN11	AFT						

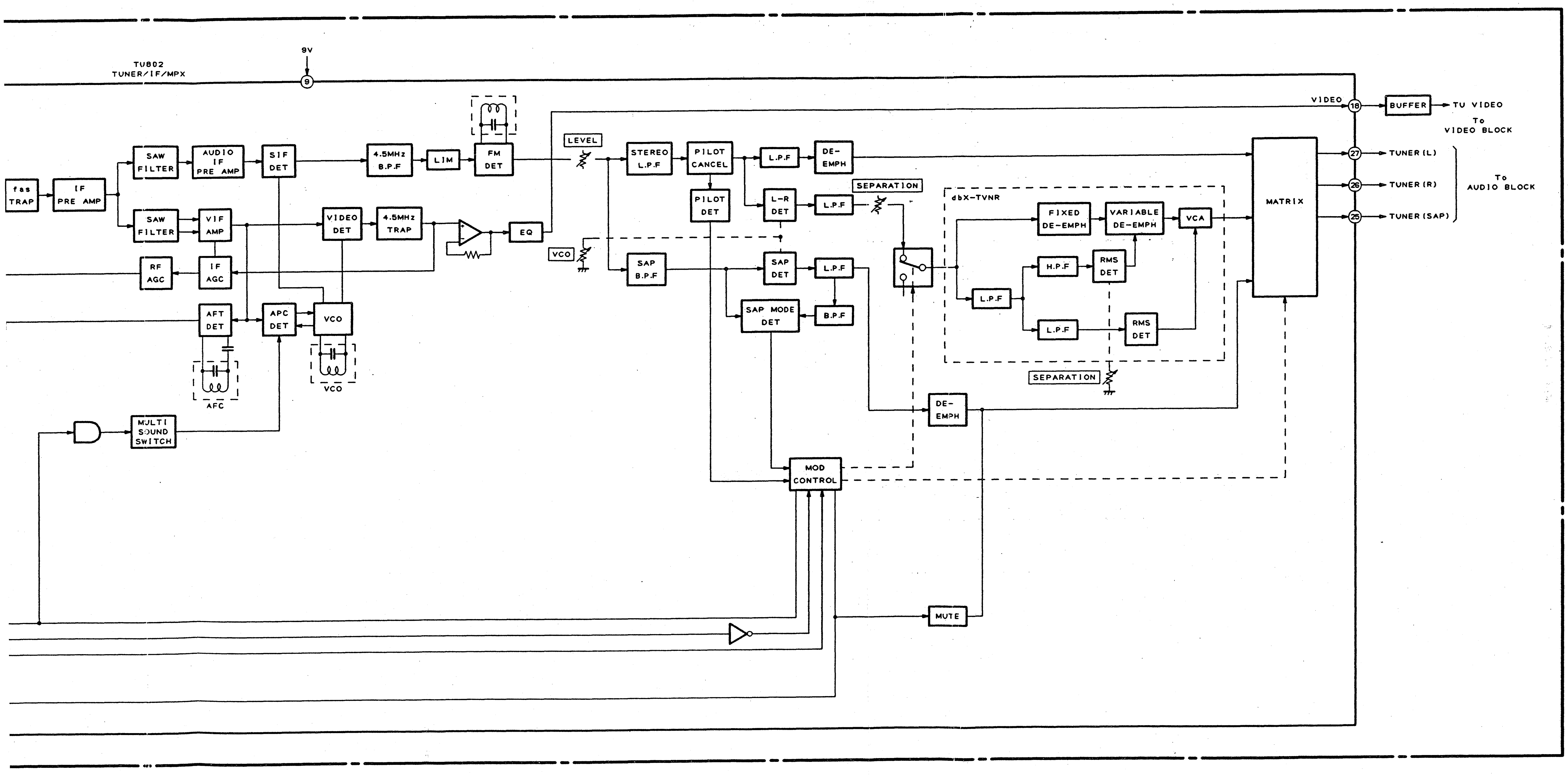
3-15. TIMER, TUNER, MODE CONTROL BLOCK DIAGRAM


MF-172 BOARD (3/3)
(See page 117)
IC101
TIMER/TUNER MODE CONT
CN101
N.C.
C+ DAT
C+ CLK
OSD FROM/To VIDEO BLOCK (MA-144)
V SYNC
H DET
CG CS
FROM/To VIDEO BLOCK (MA-144)
S CLK
SI BUS
SO BUS
To SYSTEM CONTROL BLOCK (MA-144)
C-BOX CS
C-BOX RESET
COSMO CS
COSMO RST
FROM/To TUNER BLOCK (MA-144)
PLL CLK
PLL DATA
PLL ENABLE
AFT
F MONO
MAIN/SAP
AUTO PRESET
C+ DET
C+ DATA
C+ CLK
V SYNC
H DET
CG CS
S CLK
SI BUS
SO BUS
C-BOX CS
C-BOX RESET
COSMO CS
COSMO RESET
PLL CLK
PLL DATA
PLL ENABLE
AFT
F MONO
MAIN/SAP
AUTO PRESET
V DUB
A DUB
H REW
REW
RVS
PAUSE
FWD
FF
REC
TIMER REC
STEREO
APC
AD0
AD2
AD3
AD4
AD5
AD6
CN104
S01
S16
1G
7G
FL101
FLUORESCENT DISPLAY
BZ101
BUZZER
IC104
POWER FAIL DET
UNSW 5.9V
D102
D101
POWER FAIL
IC103
RESET PULSE GENE
RESET
IC102
EEP ROM
MEM CS
MEM CLK
MEM DATA
X0
X1
X102 10MHz
CL1
CL0
X101 32.768KHz
CN102
FROM/To TUNER BLOCK (MA-144)
SAP
STEREO
To VIDEO BLOCK (MA-144)
POWER CONT
FROM SYSTEM CONTROL BLOCK (MA-144)
SIRCS
SIRCS
POWER CONT
CN103
05
SLV-900HF
INSERT
VIDEO
AUDIO
HI-SPEED REWIND
REW
REVERSE
PAUSE
FOWARD
FF
REC
TIMER REC
STEREO
APC
UNSW 5V
D011
D010
D009
D008
D007
D006
D005
D004
D003
D002
D001
D012
CN001
Q001-007
LED DRIVE
Q009
LED DRIVE
S001 REC
S002 INPUT SELECT
S003 PROGRAM +
S004 PROGRAM -
S005 TV/VTR
S006 PAUSE
S007 HI-SPEED REWIND
S009 PICTURE
NORMAL
RENTAL
EDIT
S008 TIMER REC ON/OFF
S012 APC
MF-173 BOARD
(See page 119)
CN002
DMS BLOCK
PLAY
STOP
FRD/RVS
RING2
RING1
RING0
SHUTTLE SWITCH
CN201
S201 ON/STANDBY
S202 EJECT
UNSW5V
D201
D202
POWER
IC201
REMOTE CONTROL RECEIVER
Q201
LED DRIVE
MF-171 BOARD (3/3)
(See page 119)

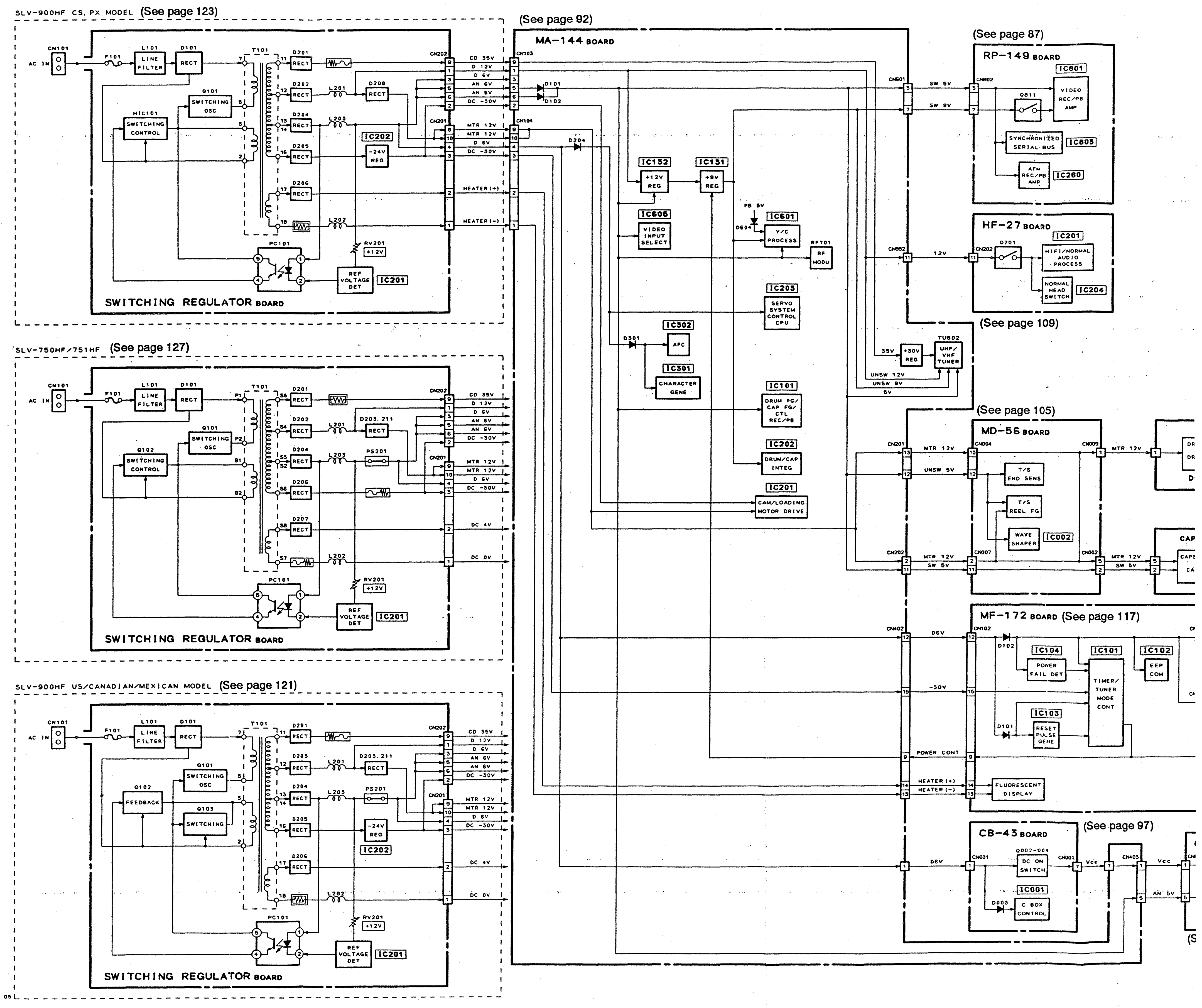
3-16. TUNER BLOCK DIAGRAM

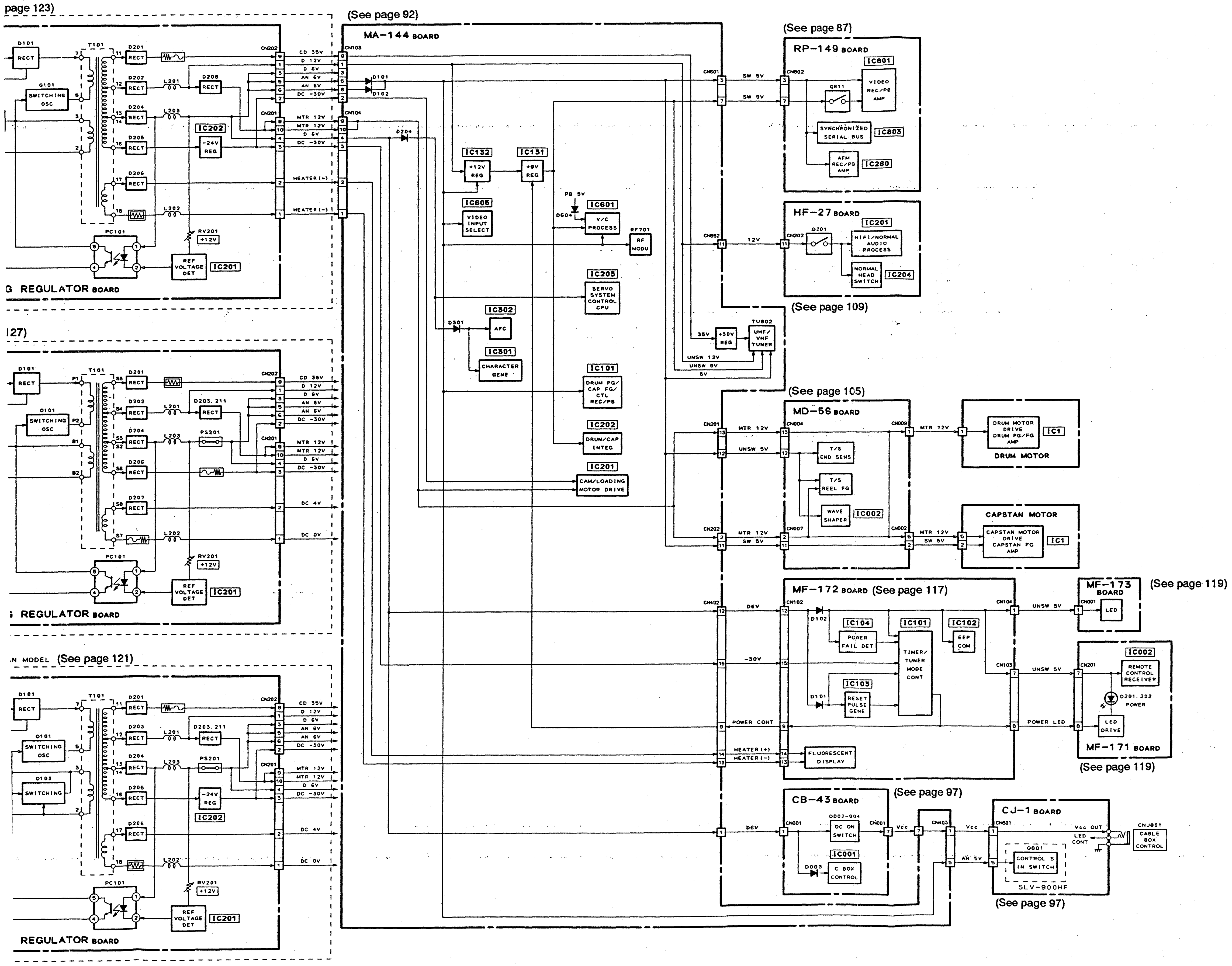
(See page 92)


MA-144 BOARD (4/4)
TU802
TUNER/IF/MPX
IF
9V
12V
35V
Q801
Q802
+30V
REG
RF701
VHF/UHF
IN
SPLITTER
TU RF
TV
VHF/UHF
OUT
VTR
RF
MUDU
FROM
SERVO/
SYSTEM
CONTROL
TV/VTR
VIDEO
AUDIO
5V
5V
TUNER
DATA
CLK
ENABLE
AGL
fas
TRAP
IF
PRE AMP
SAW
FILTER
AUDIO
IF
PRE AMP
SIF
DET
4.5MHz
B.P.F
LIM
FM
DET
SAW
FILTER
VIF
AMP
VIDEO
DET
4.5MHz
TRAP
EQ
RF
AGC
IF
AGC
AFT
DET
APC
DET
VCO
AFC
VCO
MULTI
SOUND
SWITCH
LEVEL
VCO
STEREO
L.P.F
PILOT
CANCEL
L.P.F
DE-
EMPH
PILOT
DET
L-R
DET
L.P.F
SEPARATION
dbX-TVNR
SAP
B.P.F
SAP
DET
L.P.F
L.P.F
SAP MODE
DET
B.P.F
DE-
EMPH
MOD
CONTROL
MUTE
CN401
TU DATA
TU CLK
TU ENABLE
AUTO PRESET
FROM/To
TIMER/MODE
CONTROL
(MF-172)
Q804
AGC
RF AGC
Q802
LEVEL
ADJ
AFT
AFT
F MONO
CN402
STEREO
ST LED
F MONO
TA MUTE
SAP
SAP
To
TIMER/MODE
CONTROL
(MF-172)
FROM
SERVO/
SYSTEM
CONTROL
17
16
18
14
19
15
19
18
5
4
6
7
10
19
22
24
20
8
9
1
2
3
4


TU802
TUNER/IF/MPX
9V
9
fas TRAP
IF PRE AMP
SAW FILTER
AUDIO IF PRE AMP
SIF DET
4.5MHz B.P.F
LIM
FM DET
SAW FILTER
VIF AMP
VIDEO DET
4.5MHz TRAP
EQ
RF AGC
IF AGC
AFT DET
APC DET
VCO
AFC
VCO
MULTI SOUND SWITCH
LEVEL
VCO
STEREO L.P.F
PILOT CANCEL
PILOT DET
L.P.F
DE-EMPH
L-R DET
L.P.F
SEPARATION
SAP B.P.F
SAP DET
L.P.F
SAP MODE DET
B.P.F
dbX-TVNR
FIXED DE-EMPH
VARIABLE DE-EMPH
VCA
H.P.F
RMS DET
L.P.F
L.P.F
RMS DET
SEPARATION
DE-EMPH
MOD CONTROL
MUTE
MATRIX
VIDEO
18
BUFFER
TU VIDEO
To VIDEO BLOCK
27
TUNER (L)
26
TUNER (R)
25
TUNER (SAP)
To AUDIO BLOCK

3-17. POWER BLOCK DIAGRAM

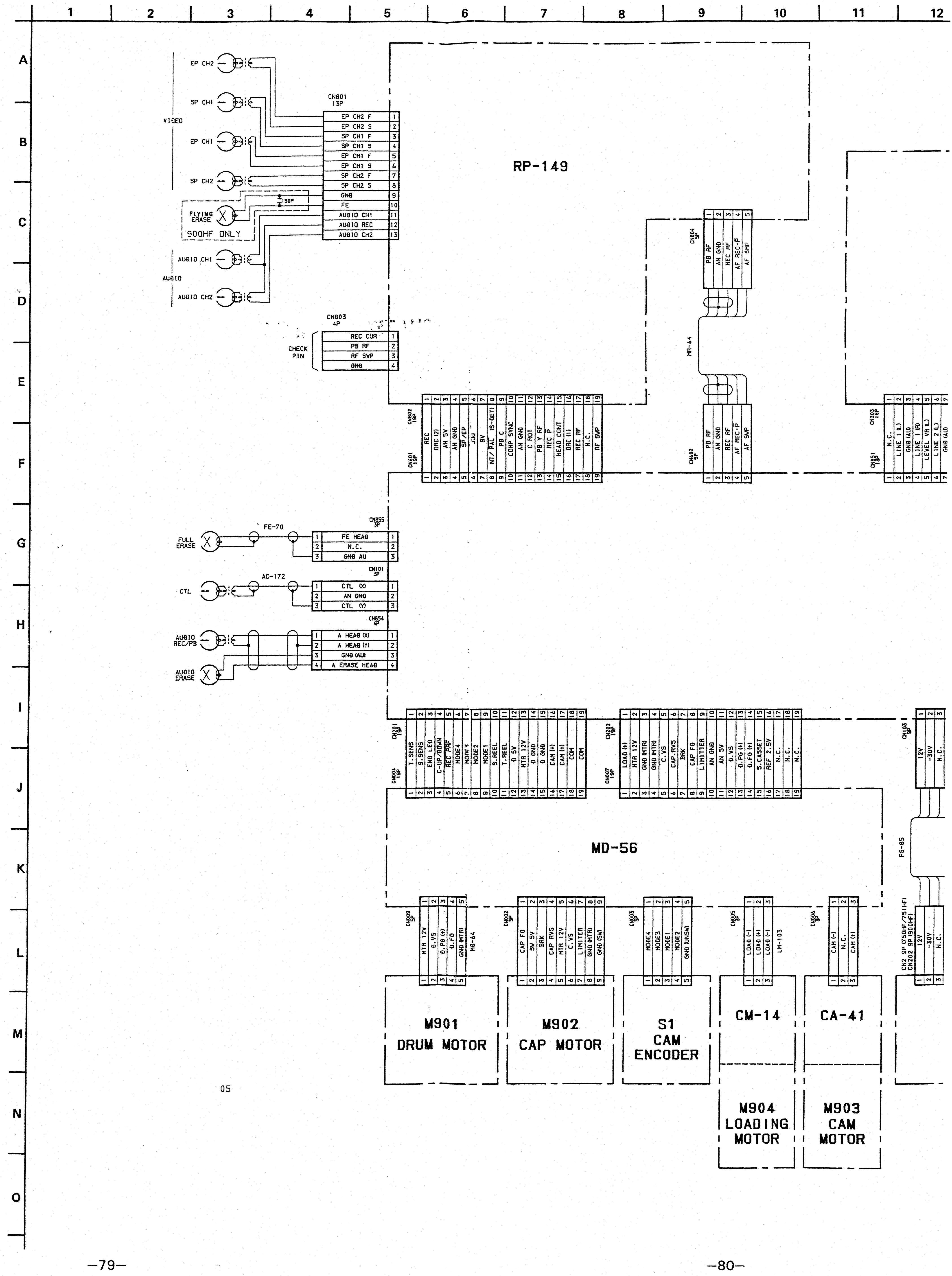

SLV-900HF CS, PX MODEL (See page 123)
SLV-750HF/751HF (See page 127)
SLV-900HF US/CANADIAN/MEXICAN MODEL (See page 121)
SWITCHING REGULATOR BOARD
CN101
AC IN
F101
L101 LINE FILTER
D101 RECT
T101
Q101 SWITCHING OSC
HIC101 SWITCHING CONTROL
Q102 SWITCHING CONTROL
Q102 FEEDBACK
Q103 SWITCHING
PC101
REF VOLTAGE DET
IC201
RV201 +12V
IC202 -24V REG
D201 RECT
D202 RECT
D204 RECT
D205 RECT
D206 RECT
D207 RECT
D208 RECT
D203, 211 RECT
L201
L202
L203
PS201
CN202
CN201
CD 35V
D 12V
D 6V
AN 6V
DC -30V
MTR 12V
HEATER (+)
HEATER (-)
DC 4V
DC 0V
(See page 92)
MA-144 BOARD
CN103
CN104
D101
D102
D204
IC132 +12V REG
IC131 +9V REG
IC606 VIDEO INPUT SELECT
IC601 Y/C PROCESS
PB 5V
D604
RF701 RF MODU
IC205 SERVO SYSTEM CONTROL CPU
IC302 AFC
D301
IC301 CHARACTER GENE
IC101 DRUM PG/CAP FG/CTL REC/PB
IC202 DRUM/CAP INTEG
IC201 CAM/LOADING MOTOR DRIVE
CN601
CN852
35V
+30V REG
TU802 UHF/VHF TUNER
UNSW 12V
UNSW 9V
5V
(See page 87)
RP-149 BOARD
CN802
SW 5V
SW 9V
Q811
IC801 VIDEO REC/PB AMP
SYNCHRONIZED SERIAL BUS
IC803
AFM REC/PB AMP
IC260
HF-27 BOARD
CN202
12V
Q201
IC201 HIFI/NORMAL AUDIO PROCESS
NORMAL HEAD SWITCH
IC204
(See page 109)
(See page 105)
MD-56 BOARD
CN004
CN009
CN007
CN002
T/S END SENS
T/S REEL FG
WAVE SHAPER
IC002
UNSW 5V
CN402
MF-172 BOARD (See page 117)
CN102
D102
D101
IC104 POWER FAIL DET
IC101 TIMER/TUNER MODE CONT
IC102 EEP COM
IC103 RESET PULSE GENE
D6V
-30V
POWER CONT
FLUORESCENT DISPLAY
CB-43 BOARD
(See page 97)
CN001
Q002-004 DC ON SWITCH
IC001 C BOX CONTROL
D003
Vcc
AN 5V
CN403


page 123)
(See page 92)
MA-144 BOARD
(See page 87)
RP-149 BOARD
IC601
VIDEO REC/PB AMP
Q811
SYNCHRONIZED SERIAL BUS
IC803
AFM REC/PB AMP
IC260
SW 5V
SW 9V
HF-27 BOARD
IC201
HI FI/NORMAL AUDIO PROCESS
Q201
NORMAL HEAD SWITCH
IC204
(See page 109)
12V
G REGULATOR BOARD
D101
RECT
Q101
SWITCHING OSC
T101
D201
D202
D204
D205
D206
D208
L201
L203
L202
IC202
-24V REG
PC101
RV201
+12V
REF VOLTAGE DET
IC201
CN202
CN201
CD 35V
D 12V
D 6V
AN 6V
AN 5V
DC -30V
MTR 12V
HEATER (+)
HEATER (-)
CN103
CN104
D101
D102
D204
IC132
+12V REG
IC131
+9V REG
IC605
VIDEO INPUT SELECT
PB 5V
D604
IC601
Y/C PROCESS
RF701
RF MODU
IC203
SERVO SYSTEM CONTROL CPU
IC302
AFC
D301
IC301
CHARACTER GENE
IC101
DRUM PG/ CAP FG/ CTL REC/PB
IC202
DRUM/CAP INTEG
IC201
CAM/LOADING MOTOR DRIVE
CN601
CN652
TU802
+30V REG
UHF/ VHF TUNER
35V
UNSW 12V
UNSW 9V
5V
127)
D203, 211
PS201
D207
DC 4V
DC 0V
(See page 105)
MD-56 BOARD
CN004
CN009
MTR 12V
UNSW 5V
T/S END SENS
T/S REEL FG
WAVE SHAPER
IC002
CN007
CN002
DRUM MOTOR DRIVE DRUM PG/FG AMP
IC1
DRUM MOTOR
CAPSTAN MOTOR
CAPSTAN MOTOR DRIVE CAPSTAN FG AMP
IC1
SW 5V
MF-172 BOARD (See page 117)
CN402
CN102
D6V
D102
IC104
POWER FAIL DET
IC101
TIMER/ TUNER MODE CONT
IC102
EEP COM
-30V
IC103
D101
RESET PULSE GENE
POWER CONT
HEATER (+)
HEATER (-)
FLUORESCENT DISPLAY
CN104
CN103
UNSW 5V
POWER LED
MF-173 BOARD
(See page 119)
CN001
LED
IC002
REMOTE CONTROL RECEIVER
CN201
D201, 202 POWER
LED DRIVE
MF-171 BOARD
(See page 119)
N MODEL (See page 121)
Q103
SWITCHING
REGULATOR BOARD
CB-43 BOARD
(See page 97)
CN001
Q002-004
DC ON SWITCH
IC001
D003
C BOX CONTROL
Vcc
CN403
AN 5V
CJ-1 BOARD
CN801
Vcc OUT
LED CONT
Q801
CONTROL S IN SWITCH
SLV-900HF
CNJ801
CABLE BOX CONTROL
(See page 97)

SECTION 4

PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM



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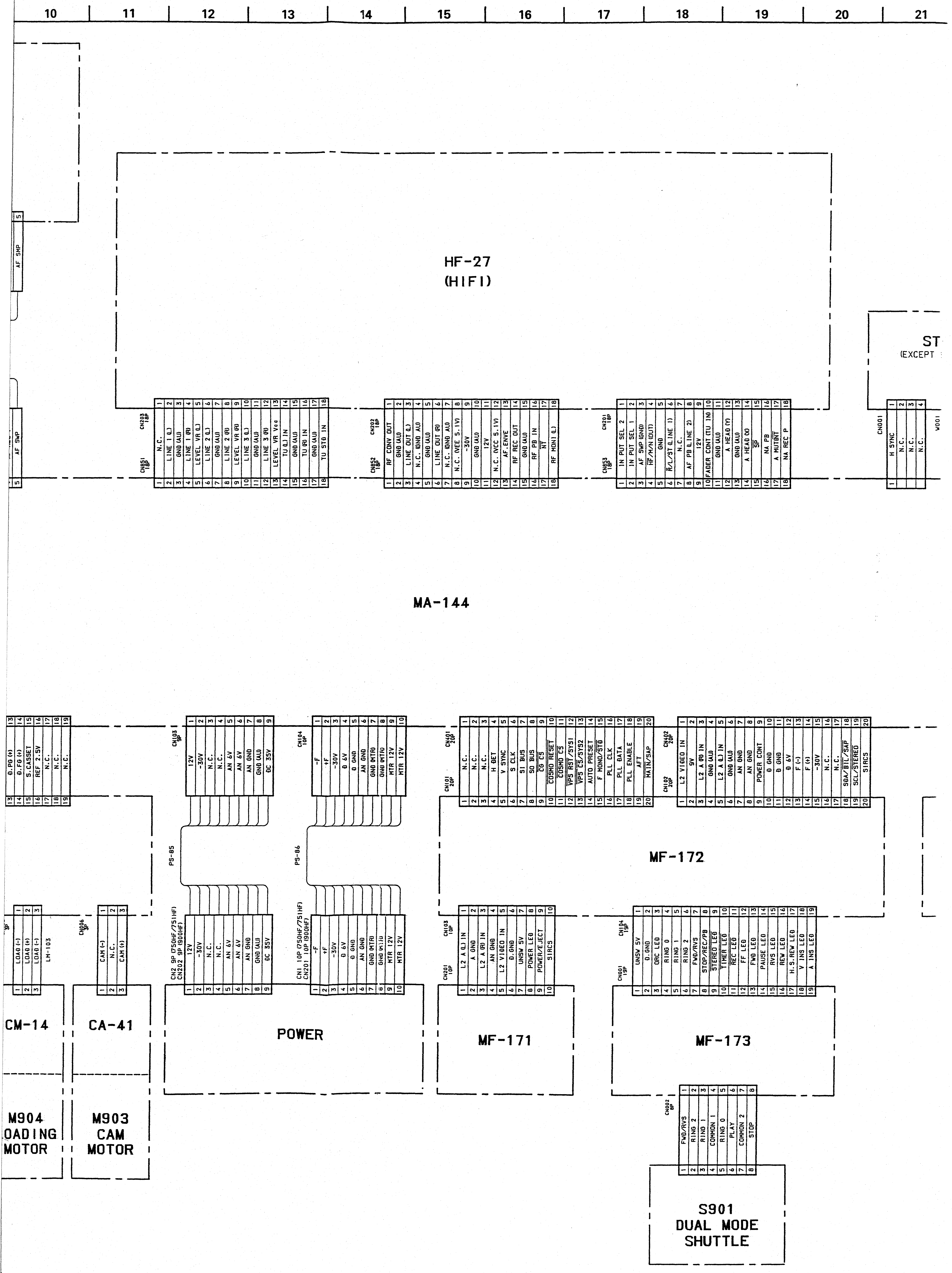
11
12
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
VIDEO
EP CH2
SP CH1
EP CH1
SP CH2
FLYING ERASE
900HF ONLY
150P
AUDIO
AUDIO CH1
AUDIO CH2
CN801 13P
EP CH2 F
EP CH2 S
SP CH1 F
SP CH1 S
EP CH1 F
EP CH1 S
SP CH2 F
SP CH2 S
GND
FE
AUDIO CH1
AUDIO REC
AUDIO CH2
RP-149
CN803 4P
CHECK PIN
REC CUR
PB RF
RF SWP
GND
CN802 19P
CN601 19P
REC
ORC (2)
AN 5V
AN GND
SP/EP
JOG
9V
NT/PAL (S-DET)
PB C
COMP SYNC
AN GND
C ROT
PB Y RF
REC P
HEAD CONT
ORC (1)
REC RF
N.C.
RF SWP
CN804 5P
CN602 5P
MR-64
PB RF
AN GND
REC RF
AF REC·P
AF SWP
CN203 18P
CN851 18P
N.C.
LINE 1 (L)
GND (AU)
LINE 1 (R)
LEVEL VR (L)
LINE 2 (L)
GND (AU)
FULL ERASE
FE-70
CN855 3P
FE HEAD
N.C.
GND AU
CTL
AC-172
CN101 3P
CTL (X)
AN GND
CTL (Y)
AUDIO REC/PB
AUDIO ERASE
CN854 4P
A HEAD (X)
A HEAD (Y)
GND (AU)
A ERASE HEAD
CN201 19P
CN004 19P
T.SENS
S.SENS
END LED
C-UP/DOWN
REC PRF
MODE4
MODE3
MODE2
MODE1
S.REEL
T.REEL
D 5V
MTR 12V
D GND
D GND
CAM (+)
CAM (+)
COM
COM
CN202 19P
CN007 19P
LOAD (+)
MTR 12V
GND (MTR)
GND (MTR)
C.VS
CAP.RVS
BRK
CAP FG
LIMITTER
AN GND
AN 5V
D.VS
D.PG (+)
D.FG (+)
S.CASSET
REF 2.5V
N.C.
N.C.
N.C.
CN103 9P
12V
-30V
N.C.
MD-56
PS-85
CN009 5P
MTR 12V
D.VS
D.PG (+)
D.FG
GND (MTR)
MD-64
CN002 9P
CAP FG
SW 5V
BRK
CAP RVS
MTR 12V
C.VS
LIMITER
GND (MTR)
GND (SW)
CN003 5P
MODE4
MODE3
MODE1
MODE2
GND (UNSW)
CN005 3P
LOAD (-)
LOAD (+)
LOAD (-)
LM-103
CN006 3P
CAM (-)
N.C.
CAM (+)
CN2 9P (750HF/751HF)
CN202 9P (900HF)
12V
-30V
N.C.
M901
DRUM MOTOR
M902
CAP MOTOR
S1
CAM
ENCODER
CM-14
CA-41
M904
LOADING
MOTOR
M903
CAM
MOTOR
05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11
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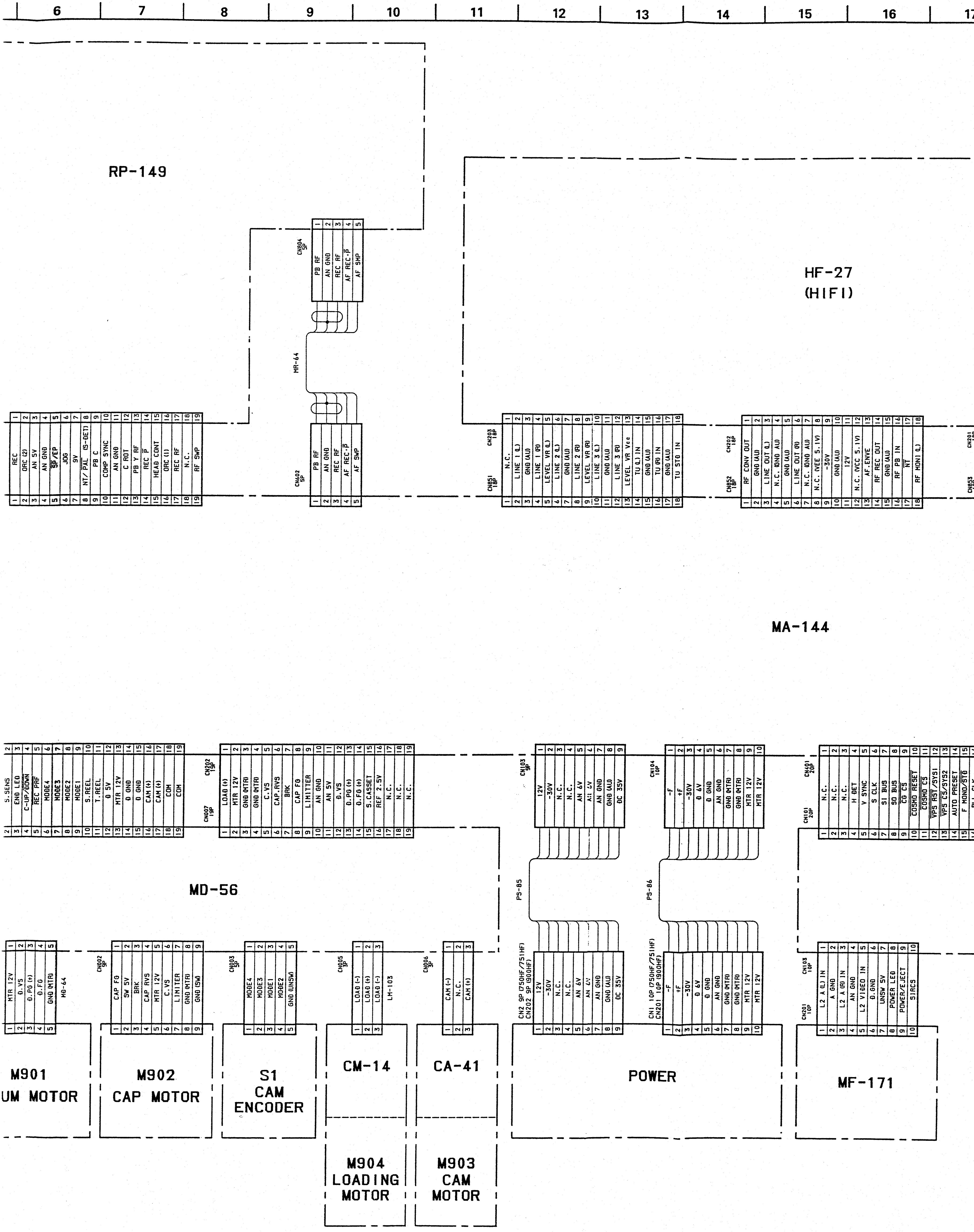
16
17
18
19
20
21
AF SMP
AF SWP
HF-27
(HIFI)
ST
(EXCEPT
CN203 18P
CN651 18P
N.C.
LINE 1 (L)
GND (AU)
LINE 1 (R)
LEVEL VR (L)
LINE 2 (L)
GND (AU)
LINE 2 (R)
LEVEL VR (R)
LINE 3 (L)
GND (AU)
LINE 3 (R)
LEVEL VR Vcc
TU (L) IN
GND (AU)
TU (R) IN
GND (AU)
TU STD IN
CN202 18P
CN652 18P
RF CONV OUT
GND (AU)
LINE OUT (L)
N.C. (GND AU)
GND (AU)
LINE OUT (R)
N.C. (GND AU)
N.C. (VEE 5.1V)
-30V
GND (AU)
12V
N.C. (VCC 5.1V)
AF.ENVE
RF REC OUT
GND (AU)
RF PB IN
NT
RF MONI (L)
CN201 18P
CN853 18P
IN PUT SEL 2
IN PUT SEL 1
AF SWP (GND)
HF/M/N (OUT)
GND
R/L/ST (LINE 1)
N.C.
AF PB (LINE 2)
12V
FADER CONT (TU IN)
GND (AU)
A HEAD (Y)
GND (AU)
A HEAD (X)
SP
NA PB
A MUTENT
NA REC P
CN001
H SYNC
N.C.
N.C.
N.C.
V001
MA-144
D.PG (+)
D.FG (+)
S.CASSET
REF 2.5V
N.C.
N.C.
N.C.
CN103 9P
12V
-30V
N.C.
N.C.
AN 6V
AN 6V
AN GND
GND (AU)
DC 35V
PS-85
CN2 9P (750HF/751HF)
CN202 9P (900HF)
CN104 10P
-F
+F
-30V
D 6V
D GND
AN GND
GND (MTR)
GND (MTR)
MTR 12V
MTR 12V
PS-86
CN1 10P (750HF/751HF)
CN201 10P (900HF)
CN401 20P
CN101 20P
N.C.
N.C.
N.C.
H DET
V SYNC
S CLK
SI BUS
SO BUS
CG CS
COSMO RESET
COSMO CS
VPS RST/SYS1
VPS CS/SYS2
AUTO PRESET
F MONO/STD
PLL CLK
PLL DATA
PLL ENABLE
AFT
MAIN/SAP
CN402 20P
CN102 20P
L2 VIDEO IN
9V
L2 A (R) IN
AN GND
L2 A (L) IN
GND (AU)
AN GND
POWER CONT
D GND
D GND
D 6V
F (+)
F (-)
-30V
N.C.
N.C.
SDA/BIL/SAP
SCL/STEREO
SIRCS
MF-172
3P
LOAD (-)
LOAD (+)
LOAD (-)
LM-103
CN006 3P
CAM (-)
N.C.
CAM (+)
CN103 10P
CN201 10P
L2 A (L) IN
A GND
L2 A (R) IN
AN GND
L2 VIDEO IN
D.GND
UNSW 5V
POWER LED
POWER/EJECT
SIRCS
CN104 19P
CN001 19P
UNSW 5V
D.GND
ORC LED
RING 0
RING 1
RING 2
FWD/RVS
STOP/REC/PB
STEREO LED
TIMER LED
REC LED
FF LED
FWD LED
PAUSE LED
RVS LED
REW LED
H.S.REW LED
V INS LED
A INS LED
CM-14
CA-41
POWER
MF-171
MF-173
M904
OADING
MOTOR
M903
CAM
MOTOR
CN002 8P
FWD/RVS
RING 2
RING 1
COMMON 1
RING 0
PLAY
COMMON 2
STOP
S901
DUAL MODE
SHUTTLE


6
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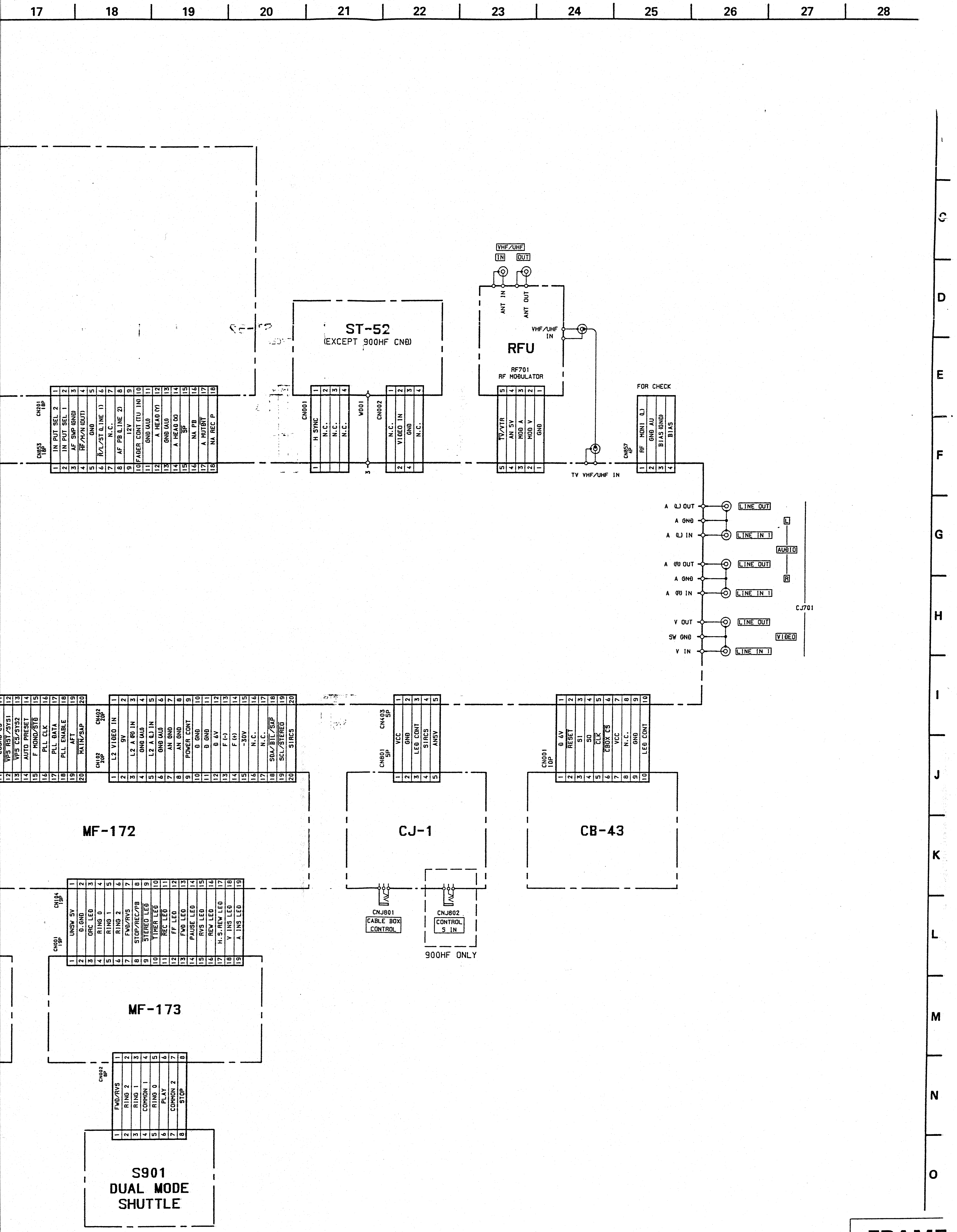
11
12
13
14
15
16
RP-149
CN804 5P
PB RF
AN GND
REC RF
AF REC·P
AF SWP
MR-64
CN602 5P
HF-27
(HIFI)
REC
DRC (2)
AN 5V
AN GND
SP/EP
JOG
9V
NT/PAL (S-DET)
PB C
COMP SYNC
AN GND
C ROT
PB Y RF
REC P
HEAD CONT
DRC (1)
REC RF
N.C.
RF SWP
CN203 18P
CN851 18P
N.C.
LINE 1 (L)
GND (AU)
LINE 1 (R)
LEVEL VR (L)
LINE 2 (L)
GND (AU)
LINE 2 (R)
LEVEL VR (R)
LINE 3 (L)
GND (AU)
LINE 3 (R)
LEVEL VR Vcc
TU (L) IN
GND (AU)
TU (R) IN
GND (AU)
TU STD IN
CN202 18P
CN852 18P
RF CONV OUT
GND (AU)
LINE OUT (L)
N.C. (GND AU)
GND (AU)
LINE OUT (R)
N.C. (GND AU)
N.C. (VEE 5.1V)
-30V
GND (AU)
12V
N.C. (VCC 5.1V)
AF.ENVE
RF REC OUT
GND (AU)
RF PB IN
NT
RF MONI (L)
MA-144
S.SENS
END LED
C-UP/DOWN
REC PRF
MODE4
MODE3
MODE2
MODE1
S.REEL
T.REEL
D 5V
MTR 12V
D GND
D GND
CAM (+)
CAM (+)
COM
COM
CN202 19P
CN007 19P
LOAD (+)
MTR 12V
GND (MTR)
GND (MTR)
C.VS
CAP.RVS
BRK
CAP FG
LIMITTER
AN GND
AN 5V
D.VS
D.PG (+)
D.FG (+)
S.CASSET
REF 2.5V
N.C.
N.C.
N.C.
CN103 9P
12V
-30V
N.C.
N.C.
AN 6V
AN 6V
AN GND
GND (AU)
DC 35V
CN104 10P
+F
-F
-30V
D 6V
D GND
AN GND
GND (MTR)
GND (MTR)
MTR 12V
MTR 12V
CN401 20P
CN101 20P
N.C.
N.C.
N.C.
H DET
V SYNC
S CLK
SI BUS
SO BUS
CG CS
COSMO RESET
COSMO CS
VPS RST/SYS1
VPS CS/SYS2
AUTO PRESET
F. MONO/STD
MD-56
PS-85
PS-86
MTR 12V
D.VS
D.PG (+)
D.FG
GND (MTR)
MD-64
CN002 9P
CAP FG
SW 5V
BRK
CAP RVS
MTR 12V
C.VS
LIMITER
GND (MTR)
GND (SW)
CN003 5P
MODE4
MODE3
MODE1
MODE2
GND (UNSW)
CN005 3P
LOAD (-)
LOAD (+)
LOAD (-)
LM-103
CN006 3P
CAM (-)
N.C.
CAM (+)
CN2 9P (750HF/751HF)
CN202 9P (900HF)
12V
-30V
N.C.
N.C.
AN 6V
AN 6V
AN GND
GND (AU)
DC 35V
CN1 10P (750HF/751HF)
CN201 10P (900HF)
-F
+F
-30V
D 6V
D GND
AN GND
GND (MTR)
GND (MTR)
MTR 12V
MTR 12V
CN103 10P
CN201 10P
L2 A (L) IN
A GND
L2 A (R) IN
AN GND
L2 VIDEO IN
D.GND
UNSW 5V
POWER LED
POWER/EJECT
SIRCS
M901
UM MOTOR
M902
CAP MOTOR
S1
CAM
ENCODER
CM-14
CA-41
POWER
MF-171
M904
LOADING
MOTOR
M903
CAM
MOTOR


17
18
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23
24
25
26
27
28
C
D
E
F
G
H
I
J
K
L
M
N
O
ST-52
(EXCEPT 900HF CND)
RFU
RF701
RF MODULATOR
VHF/UHF
IN
OUT
ANT IN
ANT OUT
VHF/UHF IN
TV VHF/UHF IN
FOR CHECK
CN201 18P
CN853 18P
IN PUT SEL 2
IN PUT SEL 1
AF SWP (GND)
HF/M/N (OUT)
GND
R/L/ST (LINE 1)
N.C.
AF PB (LINE 2)
12V
FADER CONT (TU IN)
GND (AU)
A HEAD (Y)
GND (AU)
A HEAD (X)
SP
NA PB
A MUTBT
NA REC P
CN001
H SYNC
N.C.
W001
CN002
VIDEO IN
GND
TV/VTR
AN 5V
MOD A
MOD V
CN857 4P
RF MONI (L)
GND AU
BIAS (GND)
BIAS
A (L) OUT
A GND
A (L) IN
A (R) OUT
A (R) IN
V OUT
SW GND
V IN
LINE OUT
LINE IN 1
L
AUDIO
R
VIDEO
CJ701
VPS RST/SYS1
VPS CS/SYS2
AUTO PRESET
F MONO/STO
PLL CLK
PLL DATA
PLL ENABLE
AFT
MAIN/SAP
CN402 20P
CN102 20P
L2 VIDEO IN
9V
L2 A (R) IN
GND (AU)
L2 A (L) IN
AN GND
POWER CONT
D GND
D 6V
F (-)
F (+)
-30V
SDA/BIL/SAP
SCL/STEREO
SIRCS
CN403 5P
CN801 5P
VCC
LED CONT
ANSV
CN001 10P
RESET
SI
SO
CLK
CBOX CS
MF-172
CJ-1
CB-43
CNJ801
CABLE BOX CONTROL
CNJ802
CONTROL S IN
900HF ONLY
CN104 19P
CN001 19P
UNSW 5V
D.GND
ORC LED
RING 0
RING 1
RING 2
FWD/RVS
STOP/REC/PB
STEREO LED
TIMER LED
REC LED
FF LED
FWD LED
PAUSE LED
RVS LED
REW LED
H.S.REW LED
V INS LED
A INS LED
MF-173
CN002 8P
COMMON 1
PLAY
COMMON 2
STOP
S901
DUAL MODE
SHUTTLE

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For printed wiring boards:

- ○——— : indicates a lead wire mounted on the component side.
- ●——— : indicates a lead wire mounted on the printed side.
- ● : Through hole.
- ■ : Parts mounted on the conductor side.
- ▨ : Pattern from the side which enables seeing.
- ▨ : Pattern of the rear side.
- Circled numbers refer to waveforms.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

For schematic diagram:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W (Chip resistors: 1/10W) unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF: μμF
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repair.*
- ▬▬ : B + Line.*
- ▬ ▬ ▬ : B – Line.*
- ⇨ : IN/OUT direction of B line (+, –).
- Circled numbers refer to waveforms.*
- Voltages are dc between measurement point.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage are taken with a VOM (Input impedance 10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

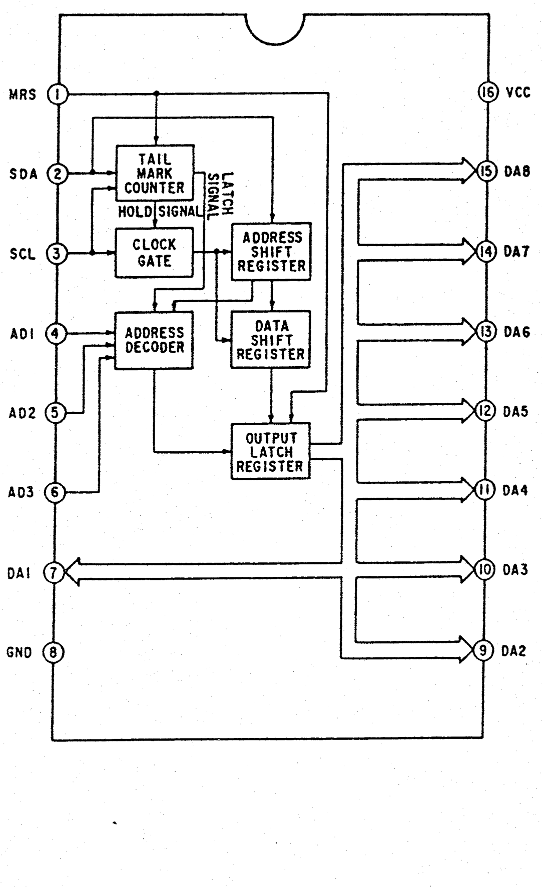
Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- * : Indicated by the color red.

- **IC Block Diagrams**

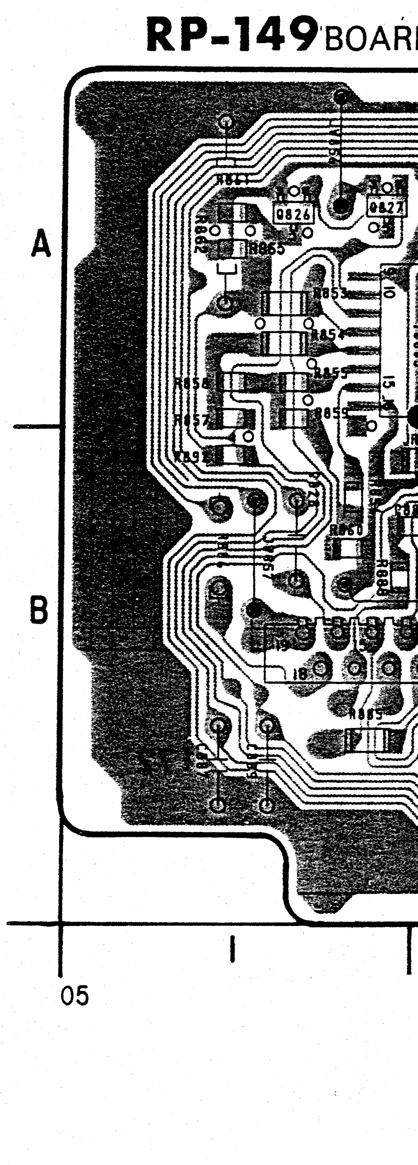
IC803 HD4978FP


MRS
SDA
SCL
AD1
AD2
AD3
DA1
GND
VCC
DA8
DA7
DA6
DA5
DA4
DA3
DA2
TAIL MARK COUNTER
LATCH SIGNAL
HOLD SIGNAL
CLOCK GATE
ADDRESS SHIFT REGISTER
ADDRESS DECODER
DATA SHIFT REGISTER
OUTPUT LATCH REGISTER
1
2
3
4
5
6
7
8
16
15
14
13
12
11
10
9

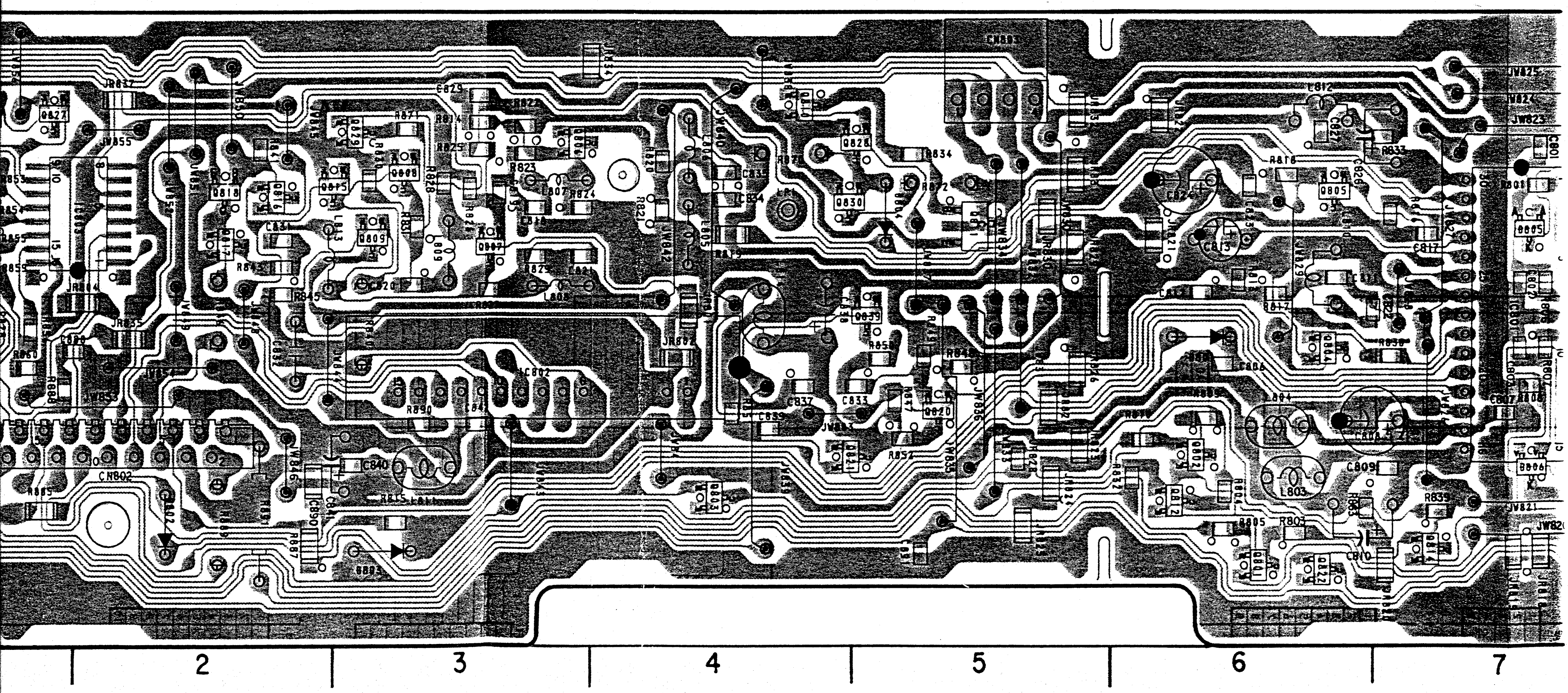
RP-149 (HEAD AMP) PRINTED WIRING BOARD

– Ref. No.: RP-149 Board; 1,000 series –

RP-149 BOARD	
D801	B-6
D802	B-2
D803	B-3
D804	A-5
D805	A-7
D806	B-7
IC260	B-9
IC801	A-7
IC803	A-1
Q801	B-6
Q802	B-6
Q803	B-4
Q804	B-6
Q805	A-6
Q806	A-3
Q807	A-3
Q808	A-3
Q809	A-3
Q810	A-4
Q811	A-5
Q812	B-6
Q814	B-7
Q815	A-2
Q816	A-2
Q817	A-2
Q818	A-2
Q820	B-5
Q821	B-5
Q822	B-6
Q823	B-8
Q824	B-8
Q826	A-1
Q827	A-1
Q828	A-5
Q830	A-4
Q839	B-5


RP-149 BOAR
A
B
05
1
Q826
Q827
R862
R865
R853
R854
R856
R857
R859
R860
R885
IC
15

BOARD



< DIODE >

D805	8-719-400-18	MA152WK
D806	8-719-400-18	MA152WK

< IC >

IC803	8-759-097-80	HD49783FP

< TRANSISTOR >

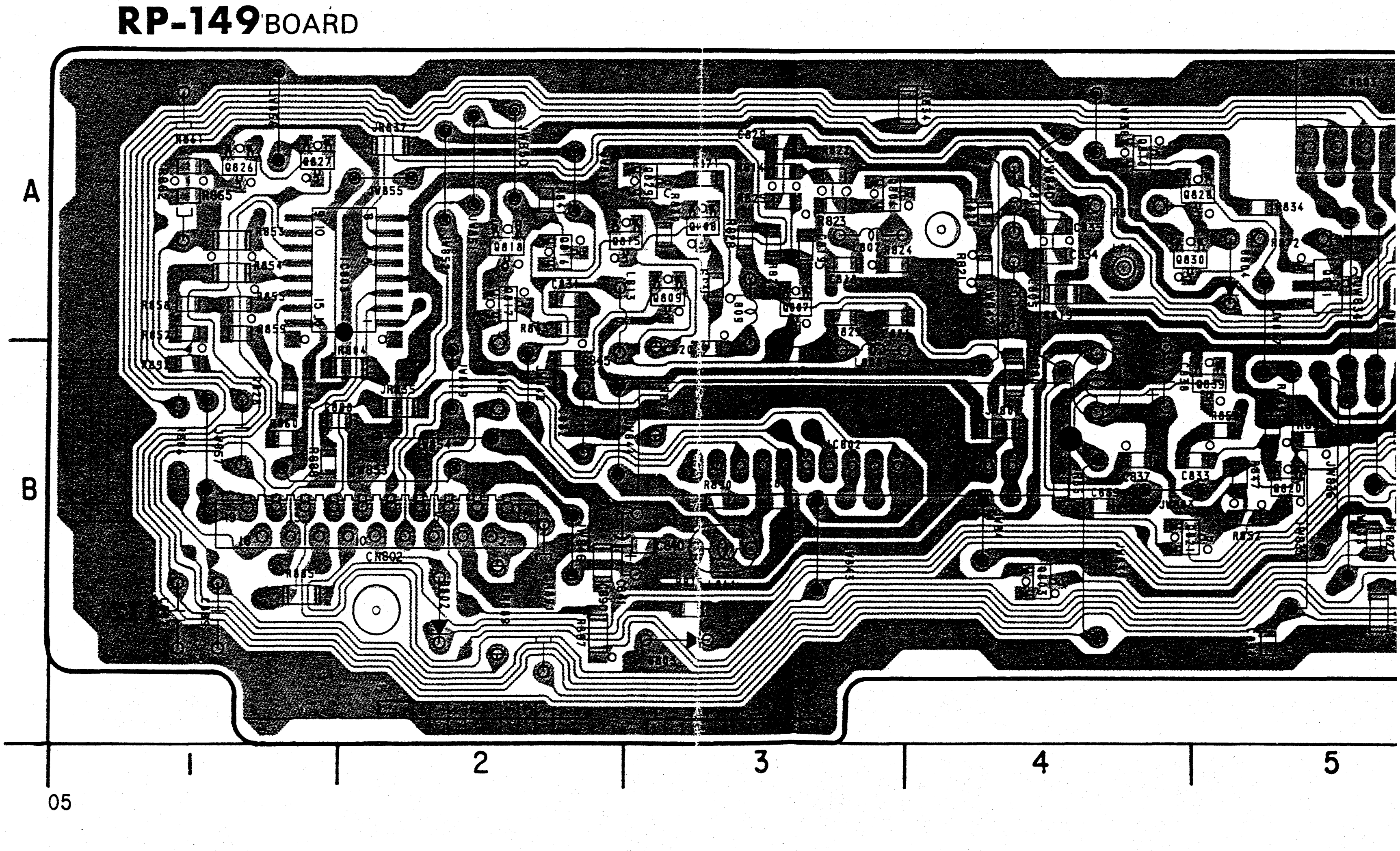
Q100	8-729-216-22	2SA1162
Q101	8-729-216-22	2SA1162
Q102	8-729-421-19	UN2213
Q802	8-729-230-49	2SC2712-G
Q803	8-729-424-18	UN2113
Q804	8-729-230-49	2SC2712-G
Q805	8-729-216-22	2SA1162
Q806	8-729-216-22	2SA1162
Q807	8-729-230-49	2SC2712-G
Q809	8-729-230-49	2SC2712-G
Q810	8-729-421-19	UN2213
Q811	8-729-301-98	2SB1000A-L
Q812	8-729-230-49	2SC2712-G
Q814	8-729-421-19	UN2213
Q822	8-729-216-22	2SA1162
Q823	8-729-216-22	2SA1162
Q824	8-729-216-22	2SA1162
Q826	8-729-424-18	UN2113
Q827	8-729-421-19	UN2213
Q828	8-729-421-19	UN2213
Q830	8-729-421-19	UN2213

RP-149 (HEAD AMP) PRINTED WIRING BOARD

– Ref. No.: RP-149 Board; 1,000 series –

RP-149 BOARD

D801	B-6
D802	B-2
D803	B-3
D804	A-5
D805	A-7
D806	B-7
IC260	B-9
IC801	A-7
IC803	A-1
Q801	B-6
Q802	B-6
Q803	B-4
Q804	B-6
Q805	A-6
Q806	A-3
Q807	A-3
Q808	A-3
Q809	A-3
Q810	A-4
Q811	A-5
Q812	B-6
Q814	B-7
Q815	A-2
Q816	A-2
Q817	A-2
Q818	A-2
Q820	B-5
Q821	B-5
Q822	B-6
Q823	B-8
Q824	B-8
Q826	A-1
Q827	A-1
Q828	A-5
Q830	A-4
Q839	B-5



< DIODE >

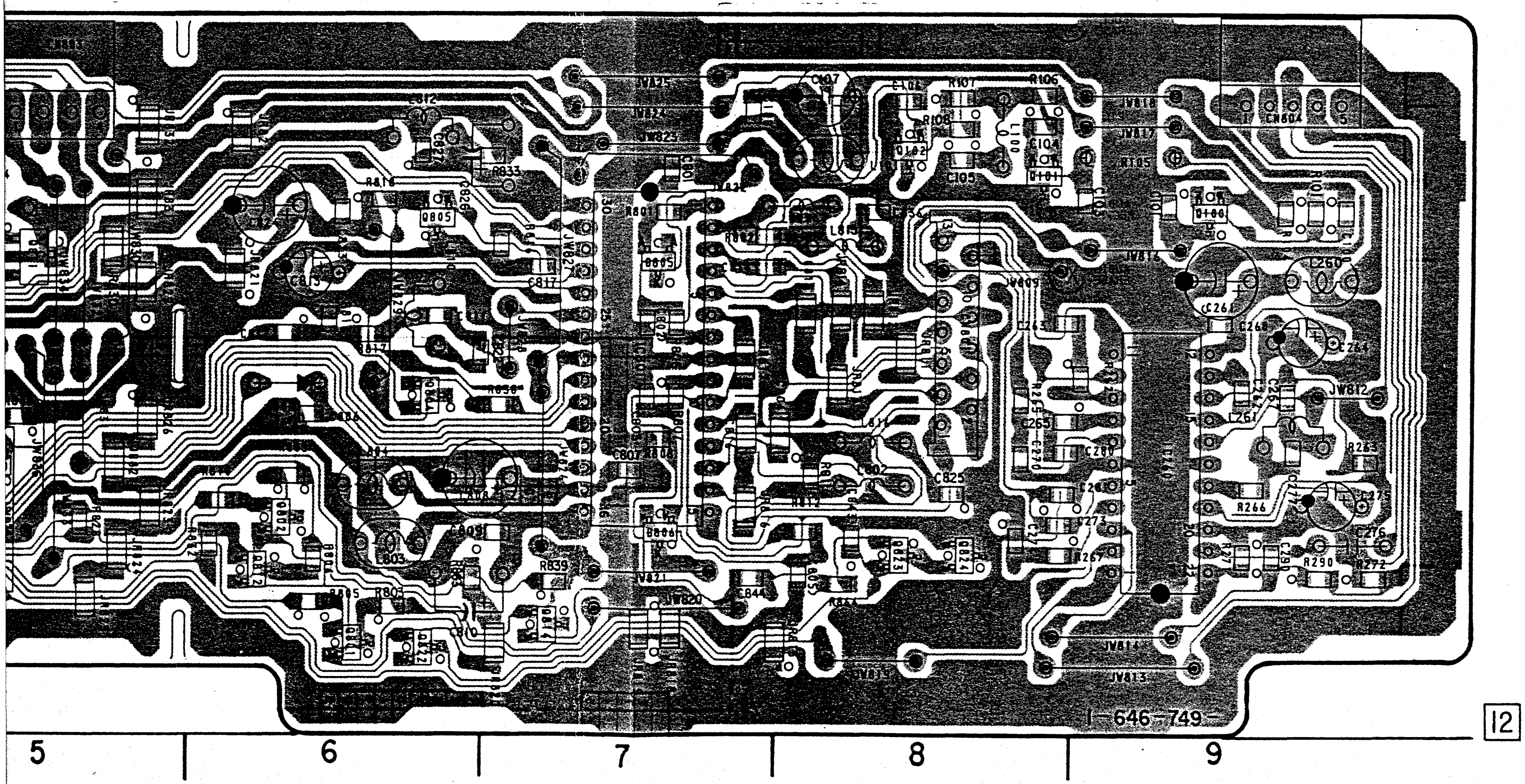
D805	8-719-400-18	MA152WK
D806	8-719-400-18	MA152WK

< IC >

IC803	8-759-097-80	HD49783FP

< TRANSISTOR >

Q100	8-729-216-22	2SA1162
Q101	8-729-216-22	2SA1162
Q102	8-729-421-19	UN2213
Q802	8-729-230-49	2SC2712-G
Q803	8-729-424-18	UN2113
Q804	8-729-230-49	2SC2712-G
Q805	8-729-216-22	2SA1162
Q806	8-729-216-22	2SA1162
Q807	8-729-230-49	2SC2712-G
Q809	8-729-230-49	2SC2712-G
Q810	8-729-421-19	UN2213
Q811	8-729-301-98	2SB1000A-L
Q812	8-729-230-49	2SC2712-G
Q814	8-729-421-19	UN2213
Q822	8-729-216-22	2SA1162
Q823	8-729-216-22	2SA1162
Q824	8-729-216-22	2SA1162
Q826	8-729-424-18	UN2113
Q827	8-729-421-19	UN2213
Q828	8-729-421-19	UN2213
Q830	8-729-421-19	UN2213



Q107
C106
R107
R106
R108
Q102
C105
C104
Q101
L101
JW810
JW811
CN604
C260
C261
C264
JW812
R263
R266
R290
R272
C276
C290
R833
R816
Q805
C817
JW825
JW824
JW823
R807
C807
R839
JW821
JW820
C644
C825
C265
C280
JW809
JW813
JW814
JW815
1-646-749
5
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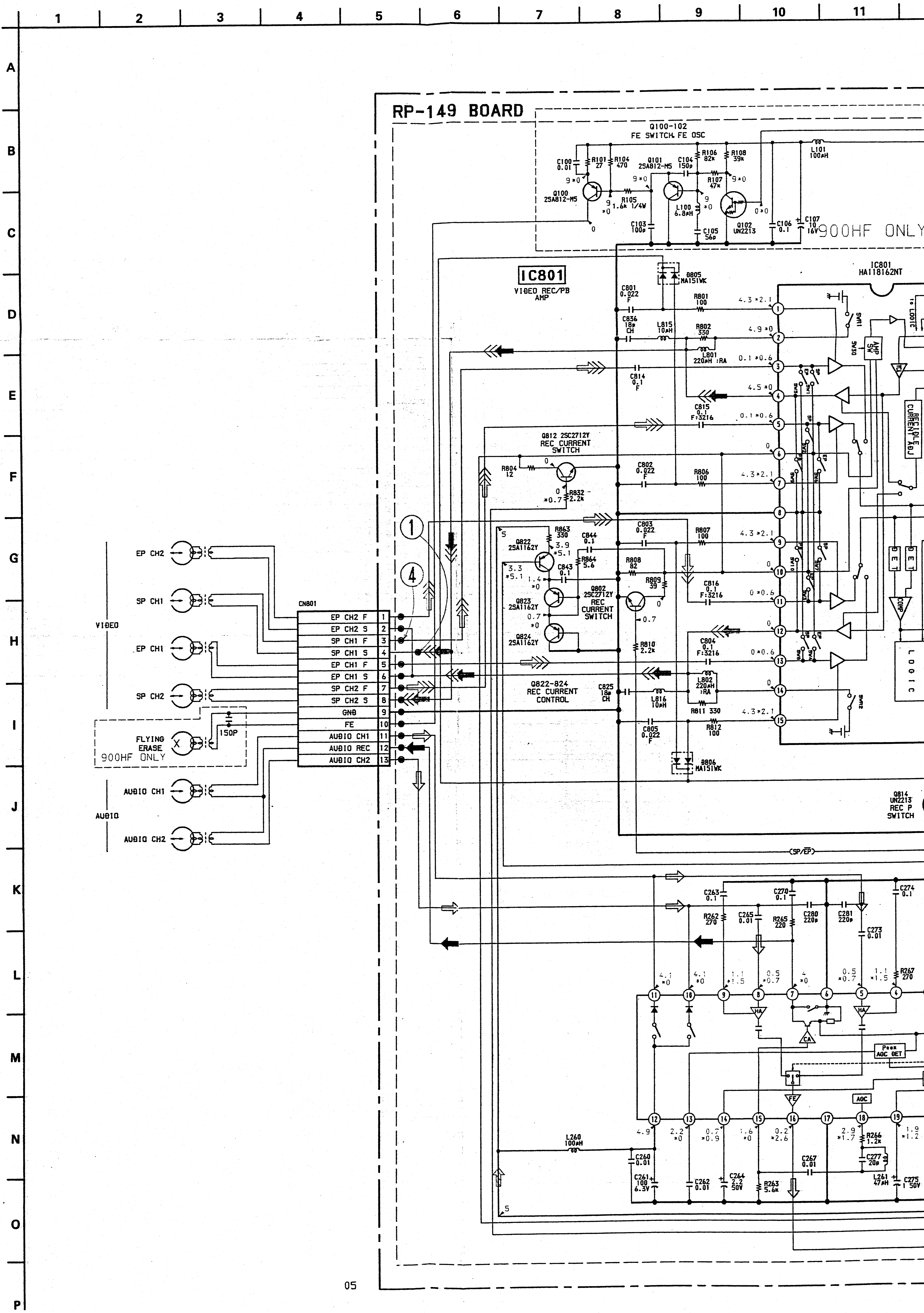
12

RP-149 (HEAD AMP) SCHEMATIC DIAGRAM
– Ref. No.: RP-149 Board; 1,000 series –


1
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3
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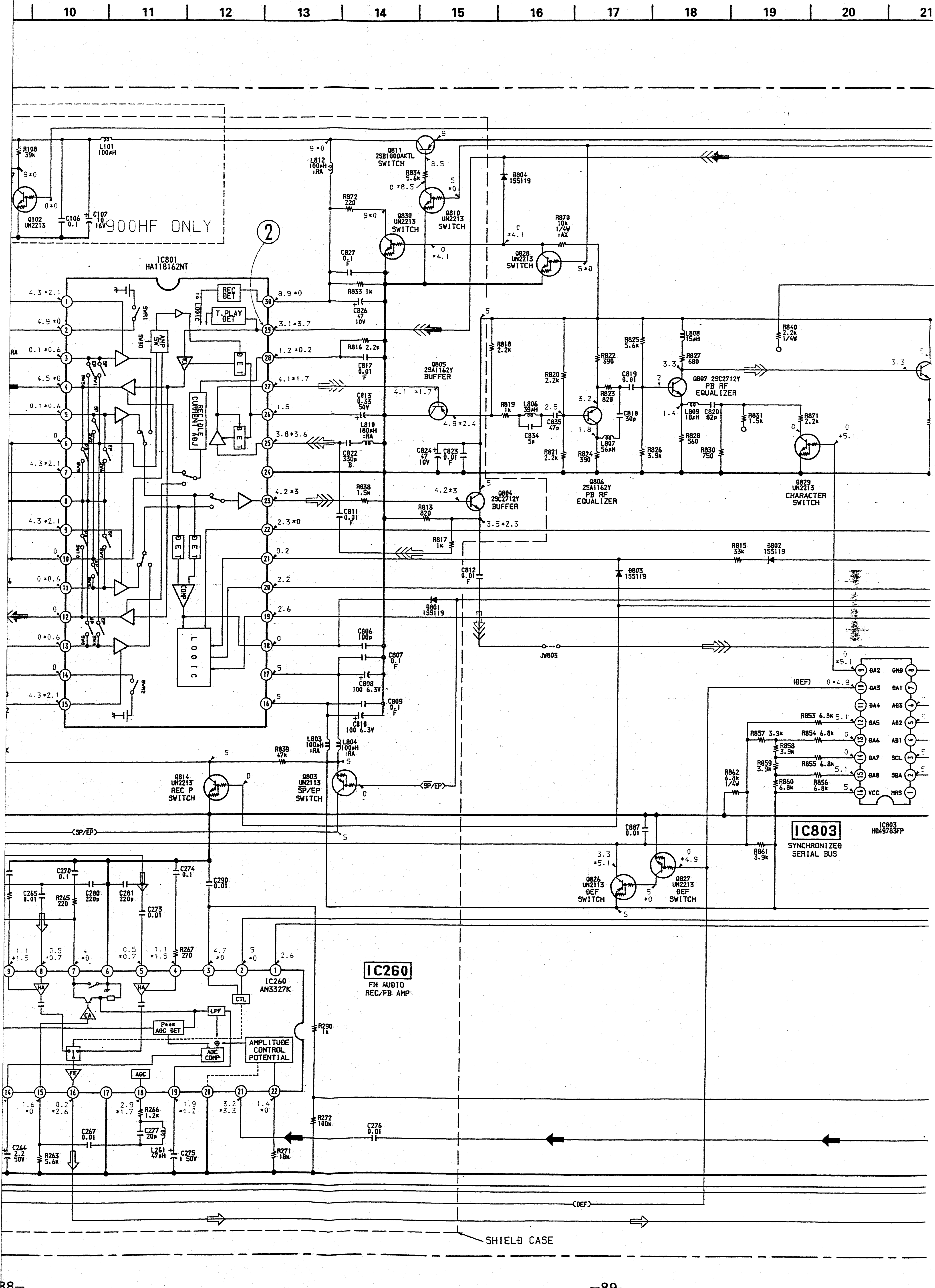
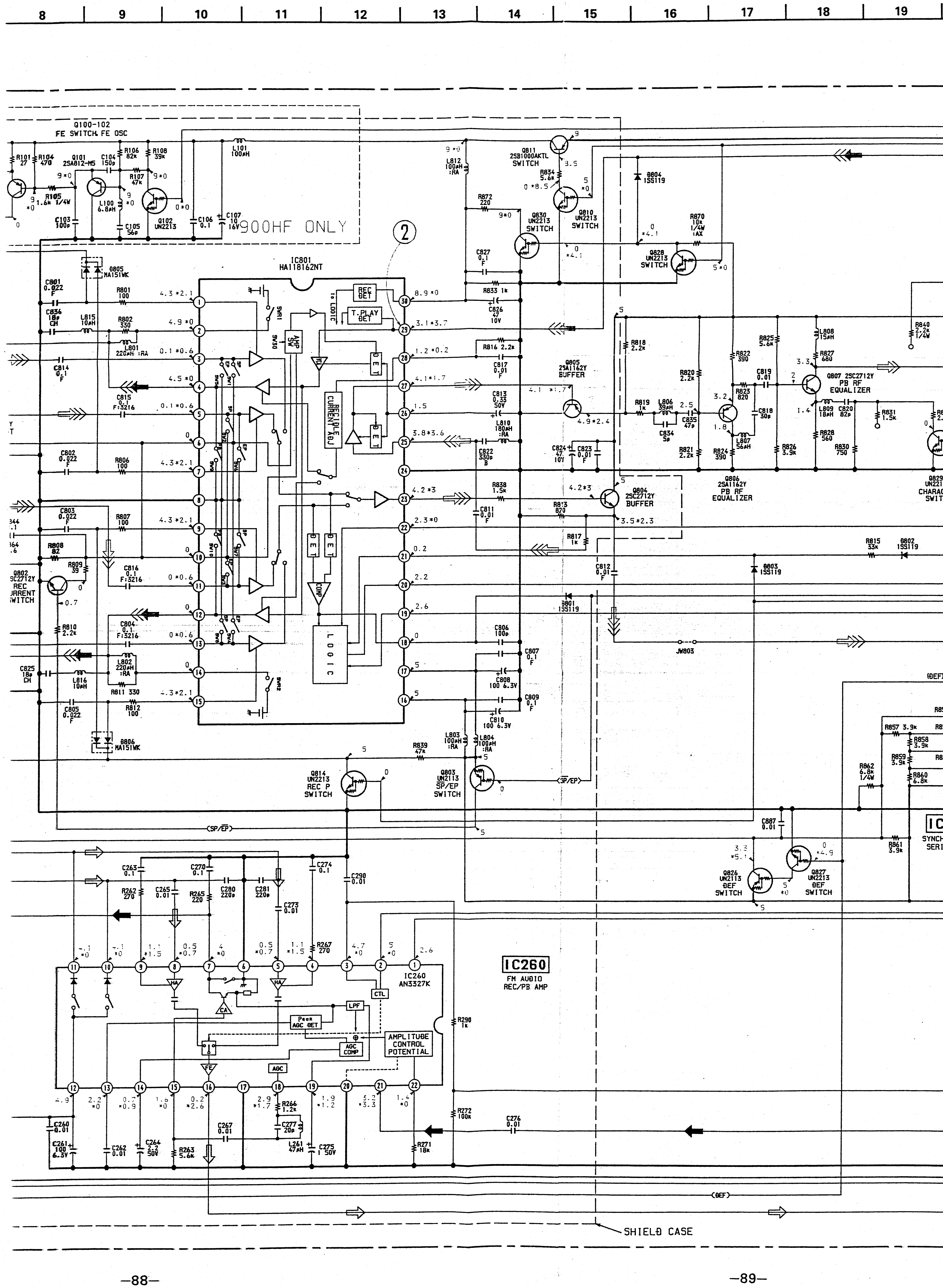
5
6
7
8
9
10
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
RP-149 BOARD
Q100-102
FE SWITCH, FE OSC
C100 0.01
R101 27
R104 470
Q101 2SA812-M5
C104 150p
R106 82k
R108 39k
L101 100μH
Q100 2SA812-M5
R105 1.6k 1/4W
L100 6.8μH
R107 47k
Q102 UN2213
C103 100p
C105 56p
C106 0.1
C107 10 16V
900HF ONLY
IC801
VIDEO REC/PB AMP
IC801 HA118162NT
D805 MA151WK
C801 0.022 F
R801 100
C836 18p CH
L815 10μH
R802 330
L801 220μH :RA
C814 0.1 F
C815 0.1 F:3216
Q812 2SC2712Y
REC CURRENT SWITCH
R804 12
R832 2.2k
C802 0.022 F
R806 100
C803 0.022 F
R807 100
R863 330
C844 0.1
Q822 2SA1162Y
R864 5.6
C843 0.1
R808 82
R809 39
Q802 2SC2712Y
REC CURRENT SWITCH
Q823 2SA1162Y
Q824 2SA1162Y
C816 0.1 F:3216
R810 2.2k
C804 0.1 F:3216
L802 220μH :RA
Q822-824
REC CURRENT CONTROL
C825 18p CH
L816 10μH
R811 330
R812 100
C805 0.022 F
D806 MA151WK
AMP SW
RECIPLE CURRENT ADJ
DET
COMP
LOGIC
Q814 UN2213
REC P SWITCH
(SP/EP)
EP CH2
SP CH1
VIDEO
EP CH1
SP CH2
FLYING ERASE
900HF ONLY
150P
AUDIO CH1
AUDIO
AUDIO CH2
CN801
EP CH2 F 1
EP CH2 S 2
SP CH1 F 3
SP CH1 S 4
EP CH1 F 5
EP CH1 S 6
SP CH2 F 7
SP CH2 S 8
GND 9
FE 10
AUDIO CH1 11
AUDIO REC 12
AUDIO CH2 13
①
④
C263 0.1
C270 0.1
C274 0.1
R262 270
C265 0.01
R265 220
C280 220p
C281 220p
C273 0.01
R267 270
HA
CA
Peak AGC DET
FE
AGC
L260 100μH
C260 0.01
C261 100 6.3V
C262 0.01
C264 2.2 50V
R263 5.6k
C267 0.01
R266 1.2k
C277 20p
L261 47μH
C275 1 50V
05


10
11
12
13
14
15
16
17
18
19
20
21
R108 39k
L101 100μH
Q102 UN2213
C106 0.1
C107 10 16V
900HF ONLY
②
IC801 HA118162NT
REC DET
T.PLAY DET
AMP SW
RECIPLE CURRENT ADJ
DET
COMP
LOGIC
SW1
SW2
L812 100μH :RA
Q811 2SB1000AKTL SWITCH
R834 5.6k
R872 220
Q830 UN2213 SWITCH
Q810 UN2213 SWITCH
D804 1SS119
R870 10k 1/4W :AX
Q828 UN2213 SWITCH
C827 0.1 F
R833 1k
C826 47 10V
R816 2.2k
C817 0.01 F
Q805 2SA1162Y BUFFER
C813 0.33 50V
L810 180μH :RA
C822 330p B
C824 47 10V
C823 0.01 F
R838 1.5k
C811 0.01 F
R813 820
Q804 2SC2712Y BUFFER
R817 1k
C812 0.01 F
R818 2.2k
R819 1k
L806 39μH
C834 5p
C835 47p
R820 2.2k
R821 2.2k
R822 390
R823 820
C818 30p
L807 56μH
R824 390
Q806 2SA1162Y PB RF EQUALIZER
R825 5.6k
C819 0.01
R826 3.9k
L808 15μH
R827 680
Q807 2SC2712Y PB RF EQUALIZER
L809 18μH
C820 82p
R828 560
R830 750
R831 1.5k
R840 2.2k 1/4W
R871 2.2k
Q829 UN2213 CHARACTER SWITCH
R815 33k
D802 1SS119
D803 1SS119
D801 1SS119
C806 100p
C807 0.1 F
C808 100 6.3V
C809 0.1 F
C810 100 6.3V
JW803
L803 100μH :RA
L804 100μH :RA
R839 47k
Q814 UN2213 REC P SWITCH
Q803 UN2113 SP/EP SWITCH
(SP/EP)
(DEF)
R853 6.8k
R857 3.9k
R854 6.8k
R858 3.9k
R859 3.9k
R855 6.8k
R862 6.8k 1/4W
R860 6.8k
R856 6.8k
R861 3.9k
DA2 DA3 DA4 DA5 DA6 DA7 DA8 VCC
GND DA1 AD3 AD2 AD1 SCL SDA HRS
IC803
IC803 HD49783FP
SYNCHRONIZED SERIAL BUS
C887 0.01
Q826 UN2113 DEF SWITCH
Q827 UN2213 DEF SWITCH
C270 0.1
C265 0.01
R265 220
C280 220p
C281 220p
C273 0.01
C274 0.1
C290 0.01
R267 270
IC260 AN3327K
IC260
FM AUDIO REC/PB AMP
HA
CA
CTL
LPF
Peak AGC DET
AGC COMP
AMPLITUDE CONTROL POTENTIAL
FE
AGC
R290 1k
R266 1.2k
C277 20p
C267 0.01
L261 47μH
C275 1 50V
C264 2.2 50V
R263 5.6k
R272 100k
C276 0.01
R271 18k
SHIELD CASE


8
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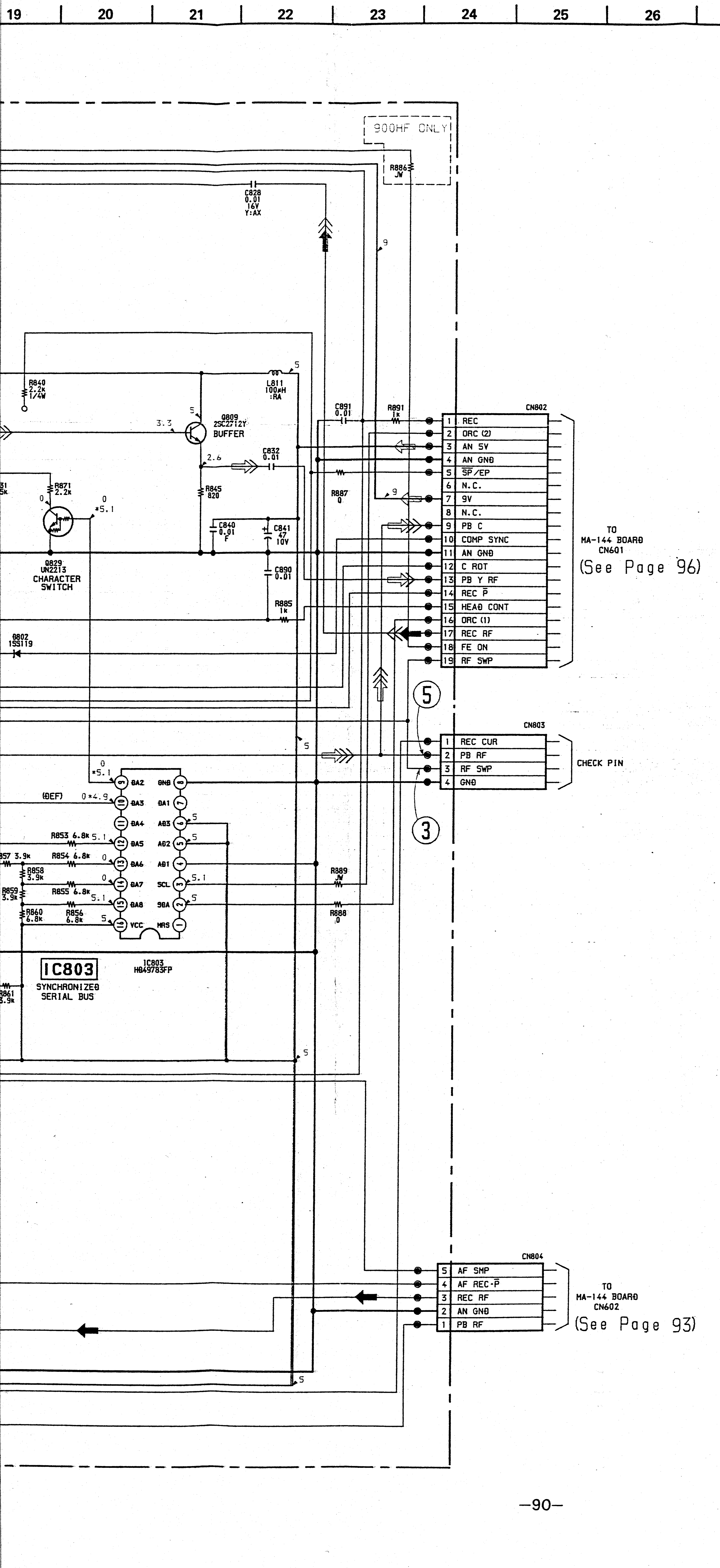
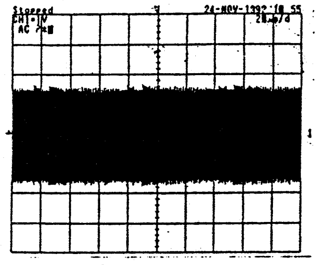
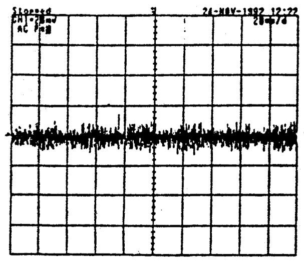
17
18
19
Q100-102
FE SWITCH, FE OSC
900HF ONLY
Q101 2SA812-M5
Q102 UN2213
L101 100µH
IC801
HA118162NT
REC DET
T.PLAY DET
AMP SW
REC/PLE CURRENT ADJ
LOGIC
Q805 MA151WK
Q806 MA151WK
Q802 2SC2712Y REC CURRENT SWITCH
Q811 2SB1000AKTL SWITCH
Q810 UN2213 SWITCH
Q830 UN2213 SWITCH
Q828 UN2213 SWITCH
D804 1SS119
Q805 2SA1162Y BUFFER
Q804 2SC2712Y BUFFER
Q806 2SA1162Y PB RF EQUALIZER
Q807 2SC2712Y PB RF EQUALIZER
Q829 UN221 CHARAC SWIT
D802 1SS119
D803 1SS119
D801 1SS119
JW803
Q814 UN2213 REC P SWITCH
Q803 UN2113 SP/EP SWITCH
SP/EP
Q826 UN2113 DEF SWITCH
Q827 UN2213 DEF SWITCH
IC SYNCH SERI
IC260
FM AUDIO REC/PB AMP
IC260 AN3327K
CTL
LPF
Peak AGC DET
AGC COMP
AMPLITUDE CONTROL POTENTIAL
AGC
FE
HA
CA
DEF
SHIELD CASE
②


19
20
21
22
23
24
25
26
27
28
29
30
900HF ONLY
R886 JW
C828 0.01 16V Y:AX
9
5
R840 2.2k 1/4W
L811 100µH :RA
Q809 2SC2712Y BUFFER
3.3
2.6
C832 0.01
C891 0.01
R891 1k
R871 2.2k
R845 820
R887 0
0 *5.1
C840 0.01 F
C841 47 10V
Q829 UN2213 CHARACTER SWITCH
C890 0.01
R885 1k
D802 1SS119
CN802
1 REC
2 DRC (2)
3 AN 5V
4 AN GND
5 SP/EP
6 N.C.
7 9V
8 N.C.
9 PB C
10 COMP SYNC
11 AN GND
12 C ROT
13 PB Y RF
14 REC P̄
15 HEAD CONT
16 DRC (1)
17 REC RF
18 FE ON
19 RF SWP
TO MA-144 BOARD CN601
(See Page 96)
⑤
③
CN803
1 REC CUR
2 PB RF
3 RF SWP
4 GND
CHECK PIN
0 *5.1
(DEF) 0 *4.9
R853 6.8k 5.1
R857 3.9k
R854 6.8k 0
R858 3.9k
R859 3.9k
R855 6.8k 5.1
R860 6.8k
R856 6.8k
DA2 GND DA3 DA1 DA4 AB3 DA5 AB2 DA6 AB1 DA7 SCL DA8 SDA VCC MRS
5.1
R889 JW
R888 0
IC803
IC803 HD49783FP
SYNCHRONIZED SERIAL BUS
R861 3.9k
CN804
5 AF SMP
4 AF REC-P̄
3 REC RF
2 AN GND
1 PB RF
TO MA-144 BOARD CN602
(See Page 93)

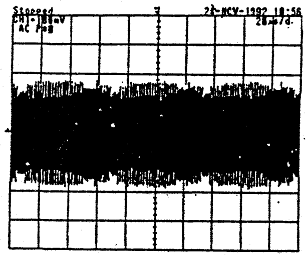
RP-149 BOARD



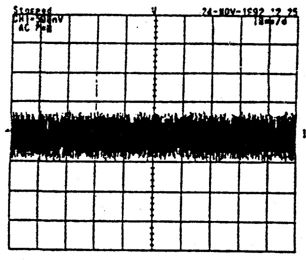
❶ CN801④ 1 V/DIV 20 µs/DIV REC



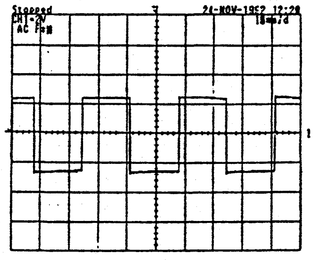
❹ CN801③ 20 mV/DIV 20 ms/DIV PB



❷ IC801㉙ 100 mV/DIV 20 µs/DIV REC



❺ CN803 ② 500 mV/DIV 10ms/DIV PB



❸ CN803③ 2 V/DIV 10 ms/DIV REC/PB

No mark : COMMON (REC)
* : PB
# : Impossible to measure the voltage at the marked points.

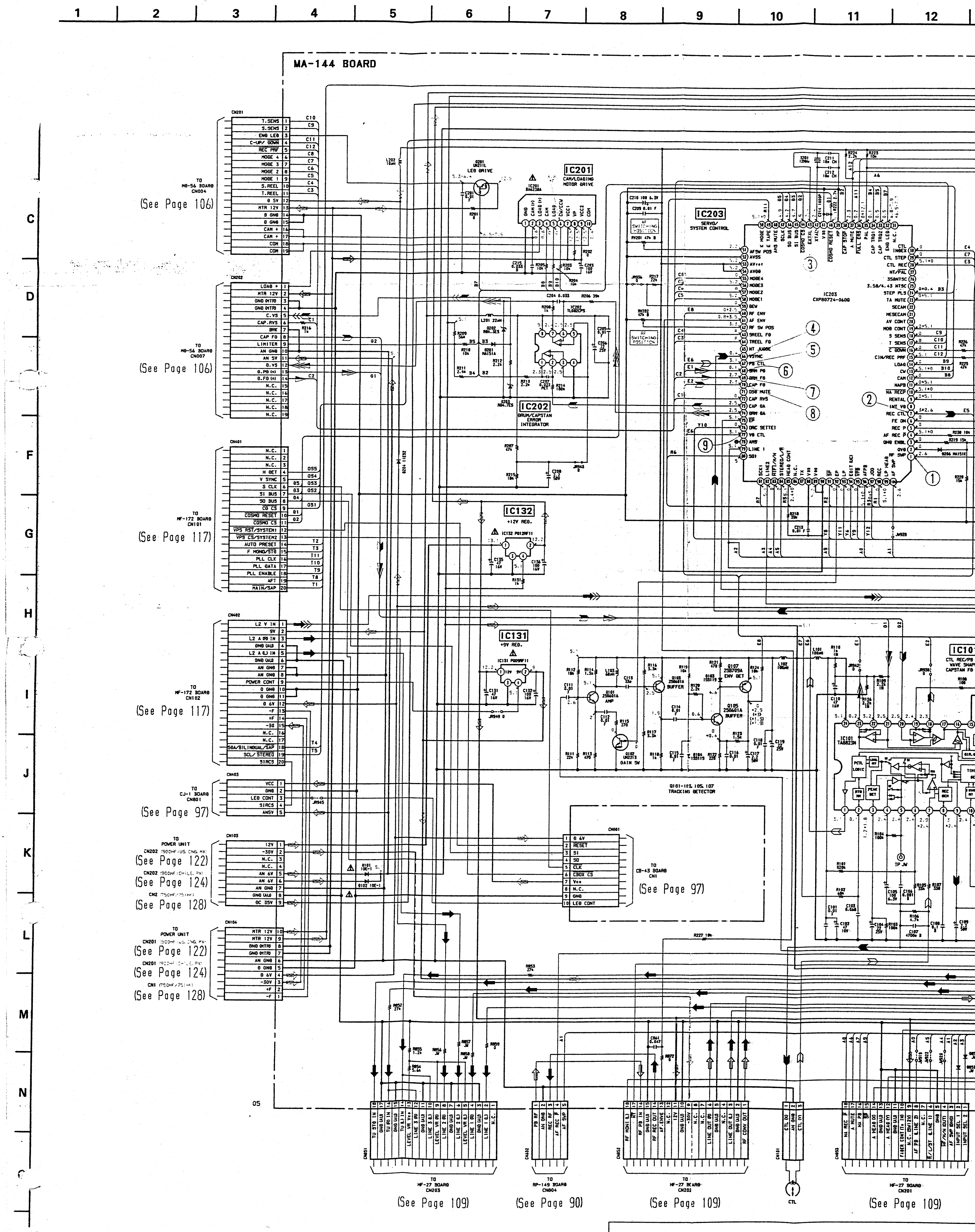
- Signal path

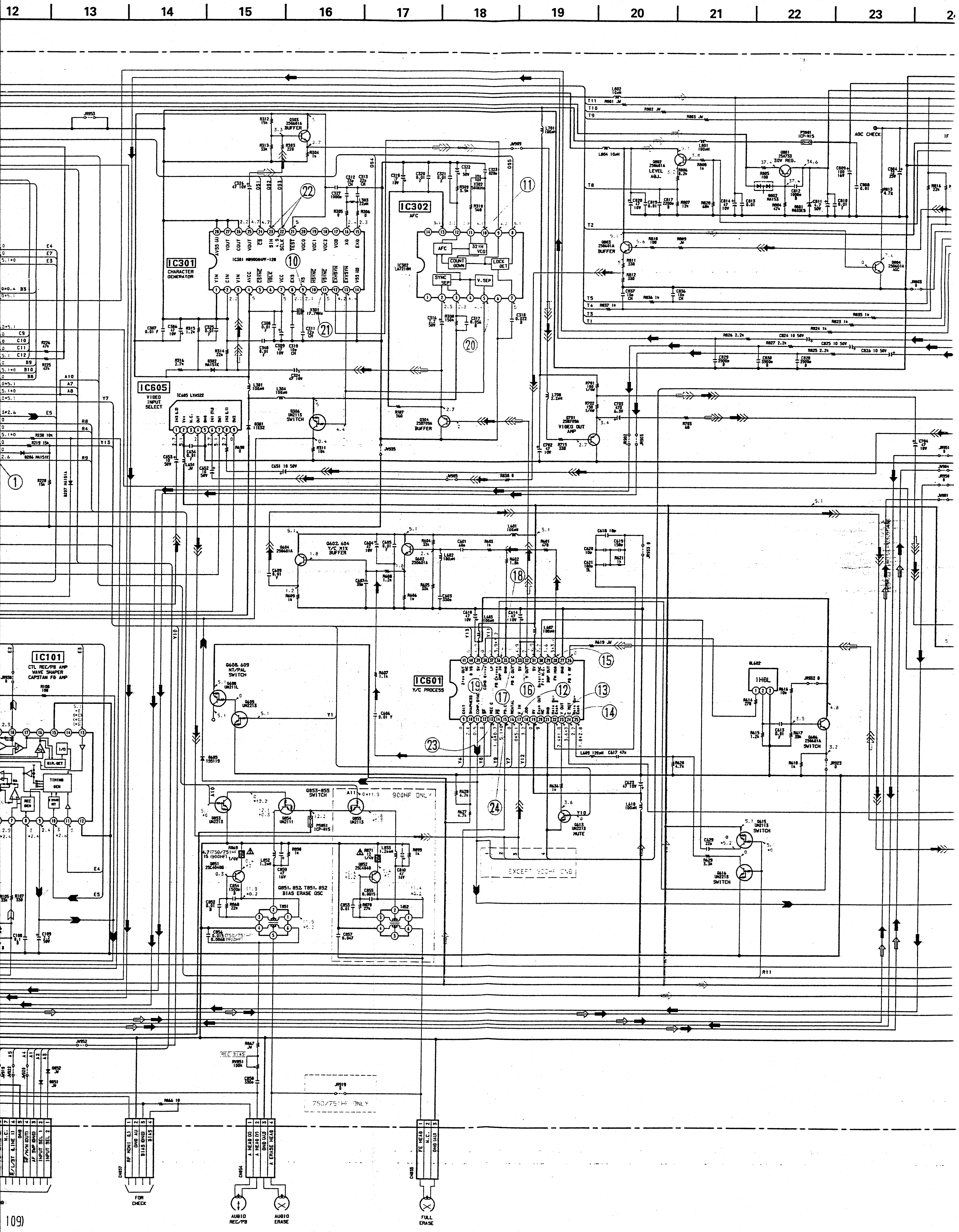
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»»	➡
PB	⇨	⇨»	⇨»»	⇨

HEAD AMP

44 (VIDEO, SERVO, SYSTEM CONTROL, AUDIO), ST-52 (VIDEO) SCHEMATIC DIAGRAM • See pages 101 for waveforms.

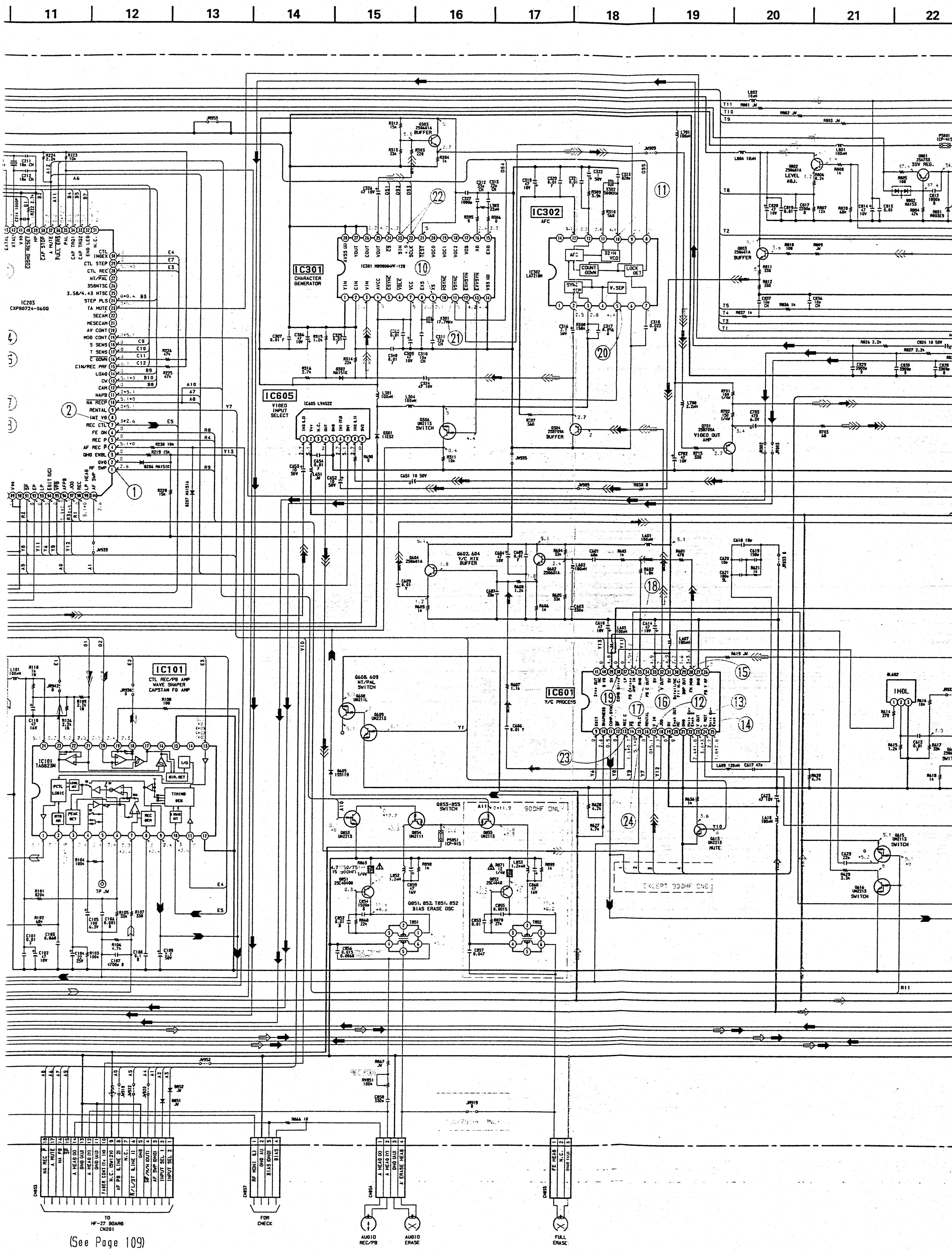
. No.: MA-144, ST-52 Boards; 2,000 series –


1
2
3
4
5
6
7
8
9
10
11
12
C
D
F
G
H
I
J
K
L
M
N
MA-144 BOARD
CN201
TO MB-56 BOARD CN004
(See Page 106)
CN202
TO MB-56 BOARD CN007
(See Page 106)
CN401
TO HF-172 BOARD CN101
(See Page 117)
CN402
TO HF-172 BOARD CN102
(See Page 117)
CN403
TO CJ-1 BOARD CN801
(See Page 97)
CN103
TO POWER UNIT
(See Page 122)
(See Page 124)
(See Page 128)
CN104
TO POWER UNIT
(See Page 122)
(See Page 124)
(See Page 128)
IC201
CAM/LOADING MOTOR DRIVE
IC202
DRUM/CAPSTAN ERROR INTEGRATOR
IC203
SERVO/SYSTEM CONTROL
IC203 CXP80724-060Q
IC132
+12V REG.
IC131
+5V REG.
IC101
TA8823N
CTL REC/PB WAVE SHAPE CAPSTAN FG
Q101-103, 105, 107 TRACKING DETECTOR
CN001
TO CB-43 BOARD CN1
(See Page 97)
CN951
TO HF-27 BOARD CN203
(See Page 109)
CN402
TO RP-149 BOARD CN804
(See Page 90)
CN952
TO HF-27 BOARD CN202
(See Page 109)
CN101
CTL
CN953
TO HF-27 BOARD CN201
(See Page 109)
VIDEO SERVO
SYSTEM CONTROL

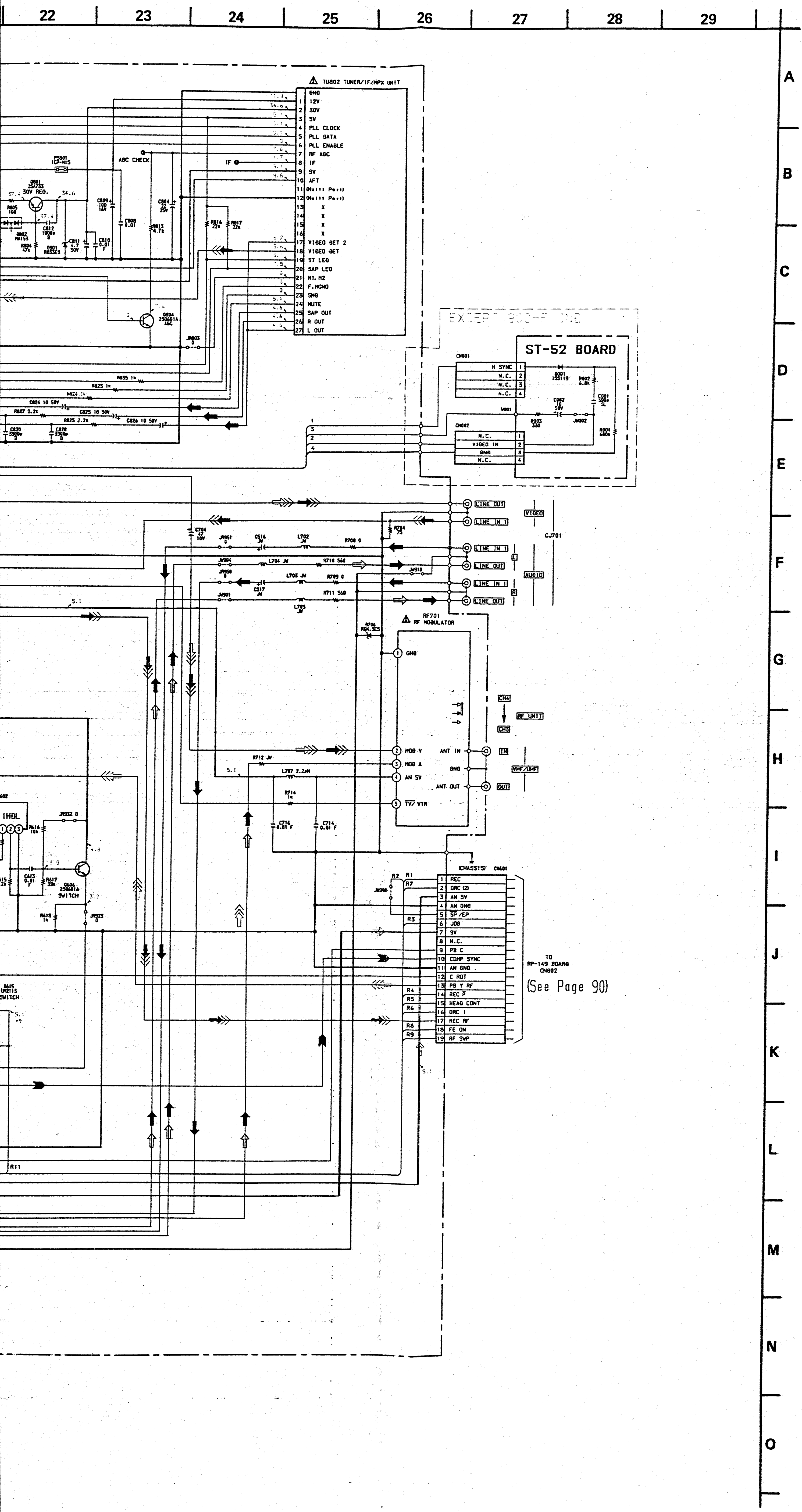

12
13
14
15
16
17
18
19
20
21
22
23
IC301
CHARACTER GENERATOR
IC301 MN90084PF-128
IC302
AFC
IC302 LA7218M
COUNT DOWN
321H VCO
LOCK DET
SYNC SEP
V. SEP
IC605
VIDEO INPUT SELECT
IC605 LV4522
Q303 2SA601A BUFFER
Q304 2SB709A BUFFER
Q306 UN2113 SWITCH
Q701 2SB709A VIDEO OUT AMP
Q802 2SA601A LEVEL ADJ.
Q801 2SA733 30V REG.
Q803 2SA601A BUFFER
Q804 2SA601A AGC
AGC CHECK
Q602, 604 Y/C MIX BUFFER
IC601
Y/C PROCESS
Q608, 609 NT/PAL SWITCH
IC101
CTL REC/PB AMP
WAVE SHAPER
CAPSTAN FG AMP
Q853-855 SWITCH
900HF ONLY
Q851, 852, T851, 852 BIAS ERASE OSC
Q613 UN2213 MUTE
Q615 UN2113 SWITCH
Q616 UN2213 SWITCH
Q606 2SA601A SWITCH
1H0L
EXCEPT 900HF ONLY
REC BIAS
750/751HF ONLY
FOR CHECK
AUDIO REC/PB
AUDIO ERASE
FULL ERASE

109)

ONTROL, AUDIO


11
12
13
14
15
16
17
18
19
20
21
22
IC301
CHARACTER GENERATOR
IC301 M35060-XXXFP-128
IC302
AFC
IC302 LA7218M
IC605
VIDEO INPUT SELECT
IC605 LVA522
IC601
Y/C PROCESS
IC101
CTL REC/PB AMP
WAVE SHAPER
CAPSTAN FG AMP
IC101 TA8823N
IC203
CXP80724-060Q
Q303 2SA601A BUFFER
Q304 2SB709A BUFFER
Q306 UN2213 SWITCH
Q602, 604 Y/C MIX BUFFER
Q608, 609 NT/PAL SWITCH
Q701 2SD709A VIDEO OUT AMP
Q802 2SA601A LEVEL ADJ.
Q801 2SA733 30V REG.
Q803 2SA601A BUFFER
Q853-855 SWITCH
Q851, 852, T851, 852 BIAS ERASE OSC
Q613 UN2215 MUTE
Q615 UN2215 SWITCH
Q616 UN2215 SWITCH
900HF ONLY
EXCEPT 900HF ONLY
CN853
CN857
CN854
CN855
TO HF-27 BOARD CN201
(See Page 109)
FOR CHECK
AUDIO REC/PB
AUDIO ERASE
FULL ERASE
NA REC
A MUTE
NA PB
SP
A HEAD (U)
GND (AU)
A HEAD (Y)
GND (AU)
FADER CONT (V-IN)
N.C. (SW12V)
AF PB (LINE 1)
R/L ST (LINE 1)
GND
HF PV/N (OUT)
HF SWP GND
INPUT SEL 1
INPUT SEL 2
RF MONI (L)
RF MONI AU
BIAS GND
BIAS
A HEAD (U)
GND (AU)
A ERASE HEAD
FE HEAD
N.C.
GND
CTL INDEX
CTL STEP
CTL REC
NT/PAL
358NTSC
3.58/4.43 NTSC
STEP PLS
TA MUTE
SECAM
MESECAM
AV CONT
MOD CONT
S SENS
T SENS
C DOWN
CIN/REC PRF
LOAD
CV
CAM
NAPB
NA RECP
RENTAL
INT V8
REC CTL
FE ON
REC P
AF REC P
QHO ENBL
QV8
RF SWP
AF SWP
LP HEAD
REC
EDIT (UC)
COSMO RESET
CAP STOP
A MUTE
FULL ERS
CAP TRQ1
CAP TRQ2
END LED
N.C.
AFC
COUNT DOWN
LOCK DET
V.SEP
TP JW

SYSTEM CONTROL, AUDIO


22
23
24
25
26
27
28
29
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
TU802 TUNER/IF/MPX UNIT
GND
1 12V
2 30V
3 5V
4 PLL CLOCK
5 PLL DATA
6 PLL ENABLE
7 RF AGC
8 IF
9 9V
10 AFT
11 (Multi Port)
12 (Multi Port)
13 X
14 X
15 X
16 X
17 VIDEO DET 2
18 VIDEO DET
19 ST LED
20 SAP LED
21 M1, M2
22 F.MONO
23 SMD
24 MUTE
25 SAP OUT
26 R OUT
27 L OUT
AGC CHECK
IF
Q801 2SA733 30V REG.
Q804 2SD601A AGC
EXCEPT 900-F ONE
ST-52 BOARD
CN001
H SYNC
N.C.
N.C.
N.C.
D001 1SS119
R002 6.8k
C001 390p SL
C002 10 50V
W001
R003 330
JW002
R001 680k
CN002
N.C.
VIDEO IN
GND
N.C.
LINE OUT
LINE IN 1
VIDEO
CJ701
LINE IN 1
LINE OUT
L
AUDIO
LINE IN 1
LINE OUT
R
R704 75
RF701 RF MODULATOR
D706 RD4.3ES
GND
MOD V
MOD A
AN 5V
TV/ VTR
ANT IN
GND
ANT OUT
CH4
CH3
RF UNIT
IN
OUT
VHF/UHF
IHDL
Q606 2SD601A SWITCH
(CHASSIS) CN601
1 REC
2 DRC (2)
3 AN 5V
4 AN GND
5 SP /EP
6 JOG
7 9V
8 N.C.
9 PB C
10 COMP SYNC
11 AN GND
12 C ROT
13 PB Y RF
14 REC P
15 HEAD CONT
16 DRC 1
17 REC RF
18 FE ON
19 RF SWP
TO RP-149 BOARD CN802
(See Page 90)

No mark : COMMON (REC)
＊ : PB
= : Impossible to measure the voltage at the marked points.

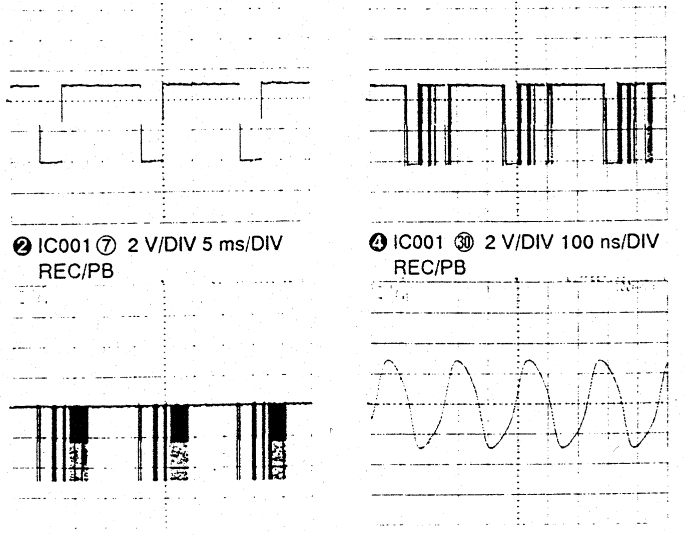
- **Signal path**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»»	➡
PB	⇨	⇨»	⇨»»	⇨

- **Signal path**

	REC	REC/PB	PB
Drum speed servo		>	
Drum phase servo		⊳>	
Drum servo (speed and phase)		⊳>>	
Capstan speed servo		⊐	
Capstan phase servo	➤»	⊐»	⊐»
Capstan servo (speed and phase)		⊐»»	
Ref. signal	➤		⊐

CB-43 BOARD



❶ IC001 ③ 2 V/DIV 5 ms/DIV
REC/PB

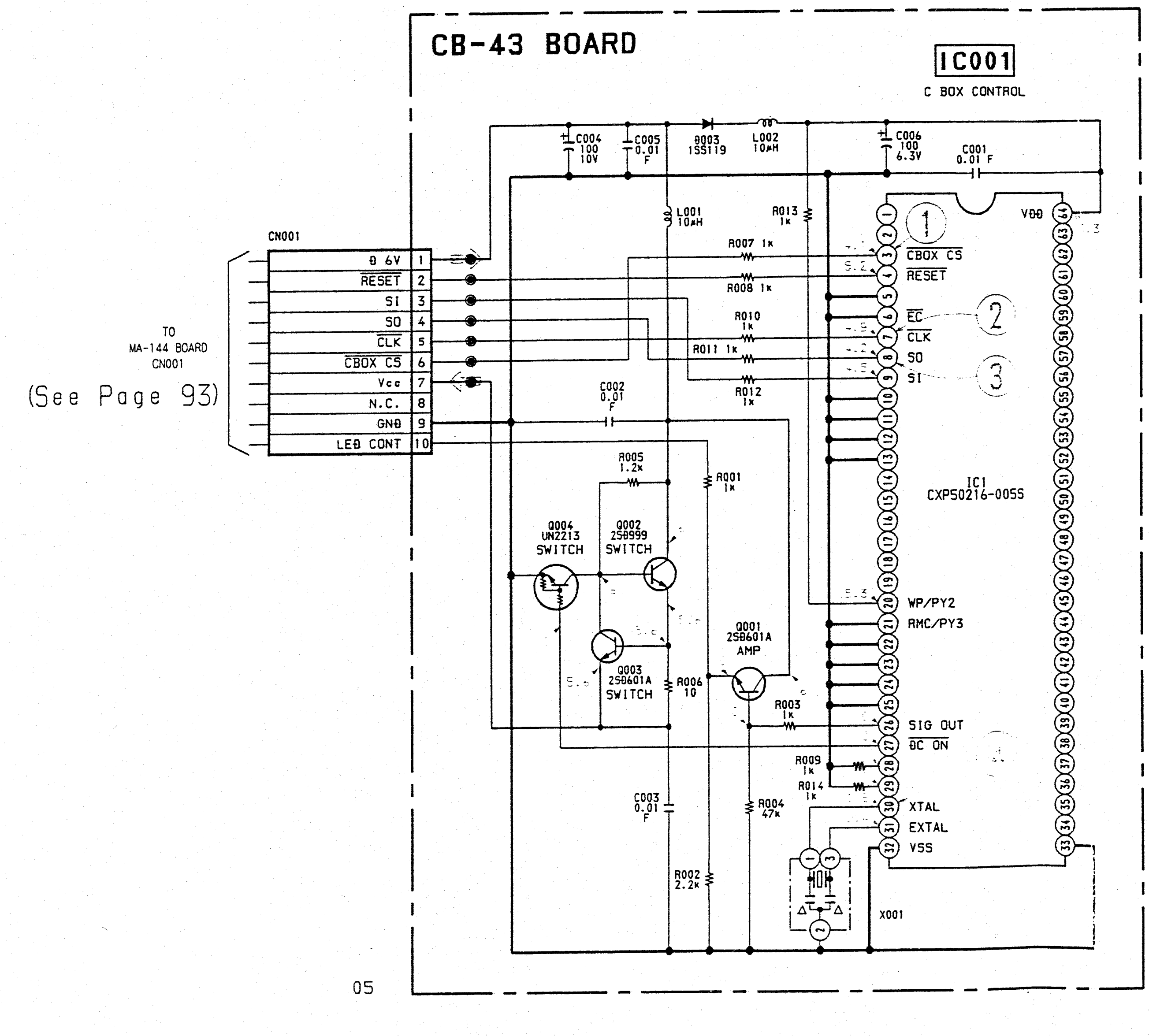
❷ IC001 ⑦ 2 V/DIV 5 ms/DIV
REC/PB

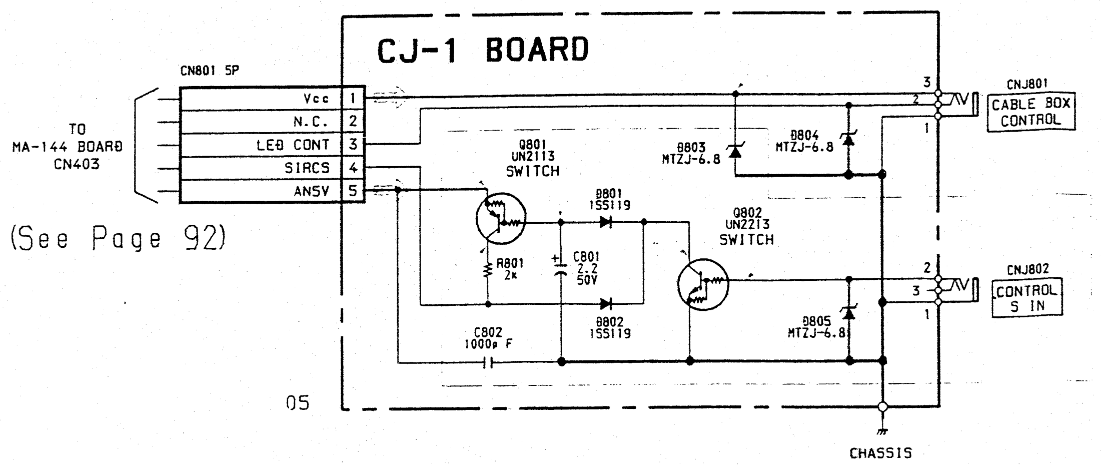
❸ IC001 ⑧ 2 V/DIV 5 ms/DIV
REC/PB

❹ IC001 ㉚ 2 V/DIV 100 ns/DIV
REC/PB

CB-43 (CABLE BOX CONTROL), CJ-1(CONTROL S IN) SCHEMATIC DIAGRAMS

– Ref. No.: CB-43, CJ-1 Boards; 2,000 series –


CB-43 BOARD
IC001
C BOX CONTROL
CN001
TO
MA-144 BOARD
CN001
(See Page 93)
B 6V 1
RESET 2
SI 3
SO 4
CLK 5
CBOX CS 6
Vcc 7
N.C. 8
GNB 9
LEB CONT 10
C004 100 10V
C005 0.01 F
B003 1SS119
L002 10μH
C006 100 6.3V
C001 0.01 F
L001 10μH
R013 1k
R007 1k
R008 1k
R010 1k
R011 1k
R012 1k
C002 0.01 F
R005 1.2k
R001 1k
Q004 UN2213 SWITCH
Q002 2SB999 SWITCH
Q003 2SB601A SWITCH
Q001 2SB601A AMP
R006 10
R003 1k
R009 1k
R014 1k
C003 0.01 F
R004 47k
R002 2.2k
X001
VBB
CBOX CS
RESET
EC
CLK
SO
SI
IC1
CXP50216-005S
WP/PY2
RMC/PY3
SIG OUT
BC ON
XTAL
EXTAL
VSS
①
②
③
05


CJ-1 BOARD
CN801 5P
TO
MA-144 BOARD
CN403
(See Page 92)
Vcc 1
N.C. 2
LEB CONT 3
SIRCS 4
ANSV 5
Q801 UN2113 SWITCH
B801 1SS119
B802 1SS119
R801 2k
C801 2.2 50V
C802 1000p F
Q802 UN2213 SWITCH
B803 MTZJ-6.8
B804 MTZJ-6.8
B805 MTZJ-6.8
CNJ801
CABLE BOX CONTROL
CNJ802
CONTROL S IN
CHASSIS
05

MA-144 (VIDEO, SERVO, SYSTEM CONTROL, AUDIO), CB-43, (CABLE

– Ref. No.: MA-144, CB-43, CJ-1, ST-52 Boards; 2,000 series –

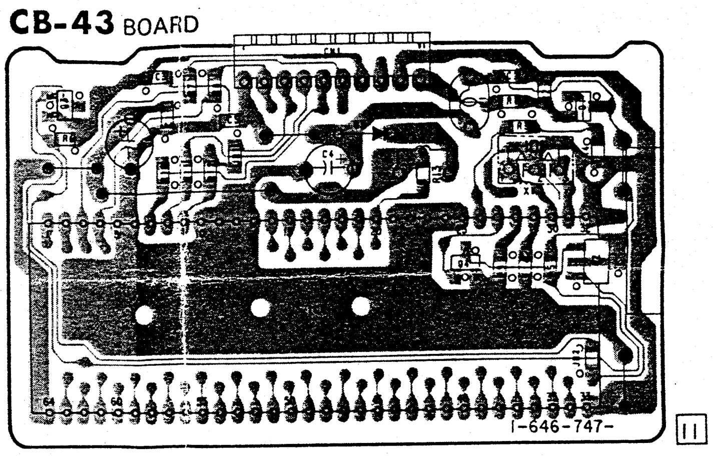
< IC >

IC001 8-752-840-28 CXP50216-005S

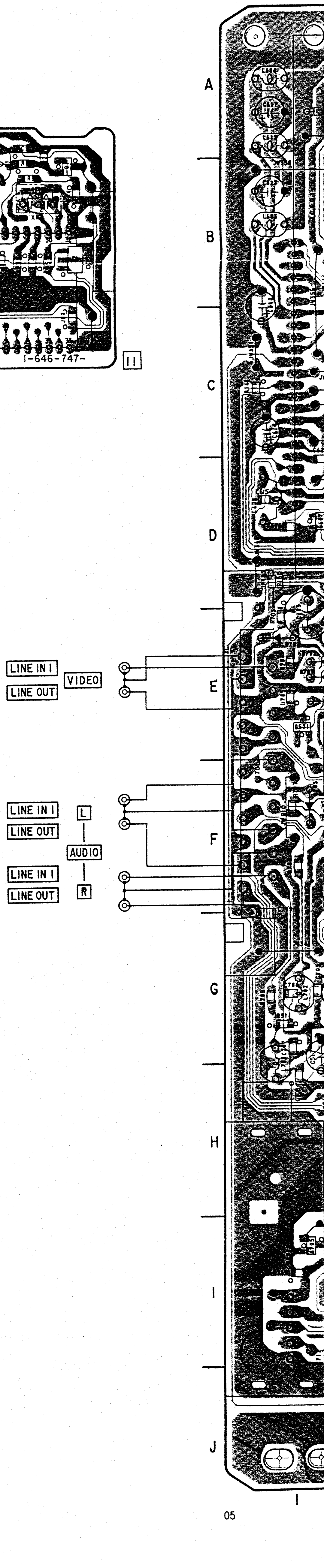
< TRANSISTOR >

Q002 8-729-140-75 2SD999-CLCK
Q004 8-729-421-19 UN2213

CB-43 BOARD



MA-14


A
B
C
D
E
F
G
H
I
J
LINE IN I
LINE OUT
VIDEO
LINE IN I
LINE OUT
L
AUDIO
LINE IN I
LINE OUT
R
1
05

IO), CB-43, (CABLE BOX CONTROL), CJ-1(CONTROL S IN), ST-52 (VIDEO) PRINTED WIRING BOARDS

ries –

CJ-1 BOARD

CNJ802
CONTROL S IN
CNJ801
CABLE BOX CONTROL
(CHASSIS)
1-646-746-
11

ST-52 BOARD

1-647-710-
CN2
CN1
05
11

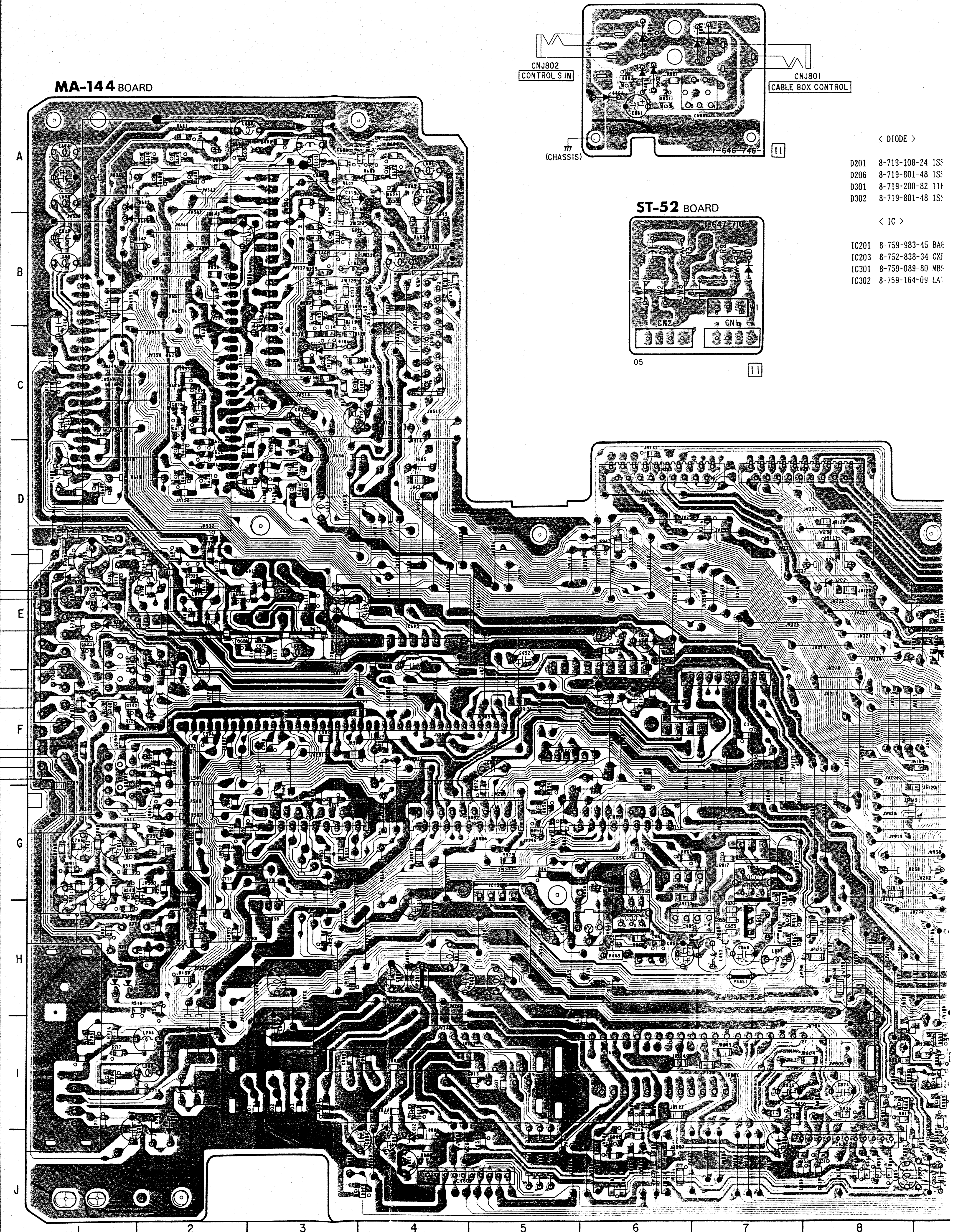
< DIODE >

D201	8-719-108-24	1SS
D206	8-719-801-48	1SS
D301	8-719-200-82	11
D302	8-719-801-48	1SS

< IC >

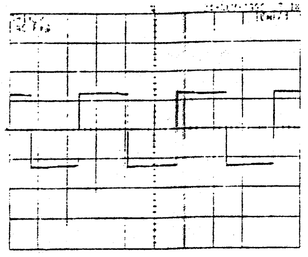
IC201	8-759-983-45	BA
IC203	8-752-838-34	CX
IC301	8-759-089-80	MB
IC302	8-759-164-09	LA

MA-144 BOARD

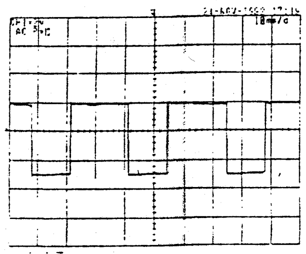

A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
8
05

MA-144 BOARD

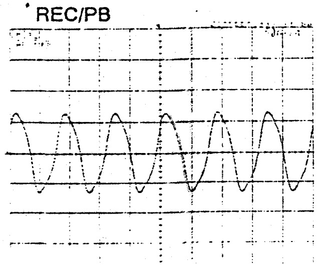
❶ IC203 ① 2 V/DIV 10 ms/DIV
REC/PB



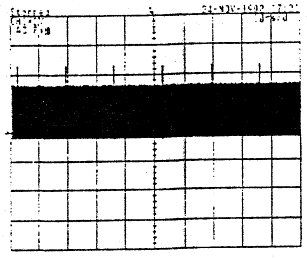
❷ IC203 ⑦ 2 V/DIV 10 ms/DIV
REC



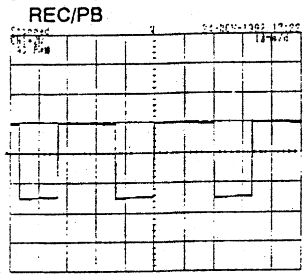
❸ IC203 ㊷ 2 V/DIV 50ns/DIV
REC/PB



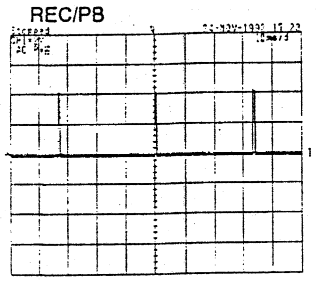
❹ IC203 (66) 2 V/DIV 10 ms/DIV
REC/PB



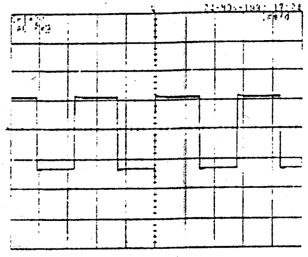
❺ IC203 (67) 2 V/DIV 10 ms/DIV
REC/PB



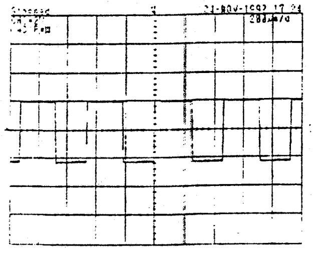
❻ IC203 (68) 2 V/DIV 10 ms/DIV
REC/PB



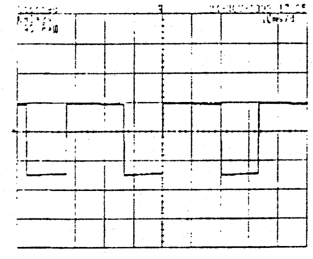
❼ IC203 (69) 2 V/DIV 1 ms/DIV
REC/PB



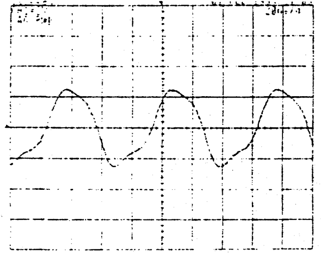
❽ IC203 (70) 2 V/DIV 200 μs/DIV
REC/PB



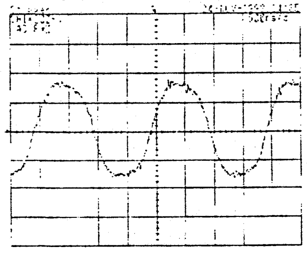
❾ IC203 (77) 2 V/DIV 10 ms/DIV
REC/PB



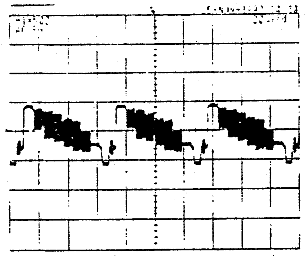
❿ IC301 ⑨ 2 V/DIV 20 ns/DIV
REC/PB



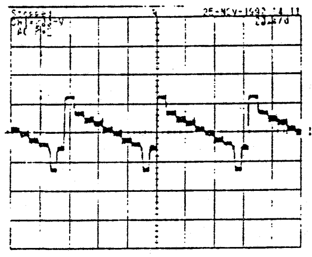
⓫ IC302 ⑩ 200 mV/DIV 500 ns/DIV
REC/PB



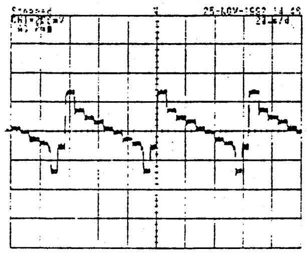
⓬ IC601 ⑰ 500 mV/DIV 20 μs/DIV
REC/PB



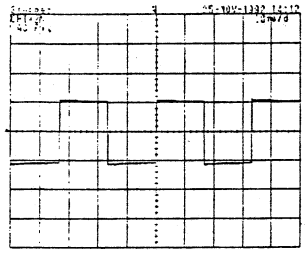
⓭ IC601 ㉓ 200 mV/DIV 20 μs/DIV
REC



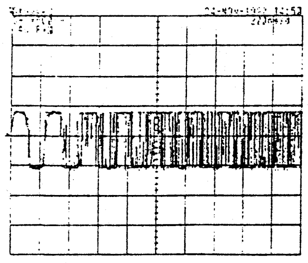
⓭ IC601 ㉓ 200 mV/DIV 20 μs/DIV
PB



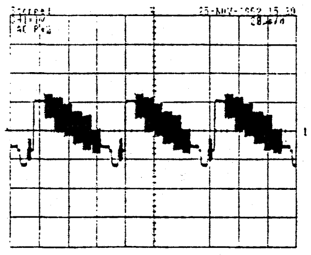
⓮ IC601 ㉔ 2 V/DIV 10 ms/DIV
REC/PB



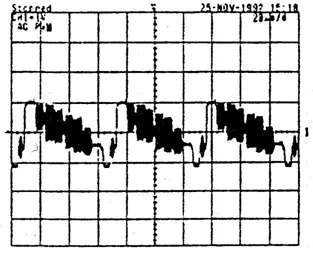
⓯ IC601 ㉘ 500 mV/DIV 200 ns/DIV
REC



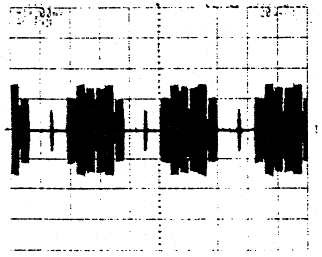
⓰ IC601 ㉜ 1 V/DIV 20 μs/DIV
REC



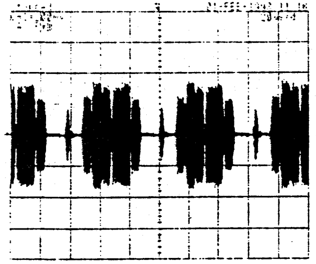
⓰ IC601 ㉜ 1 V/DIV 20 μs/DIV
PB



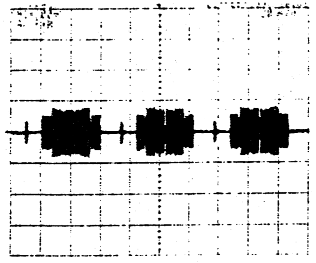
⓱ IC601 ㉞ 200 mV/DIV 20 μs/DIV
REC



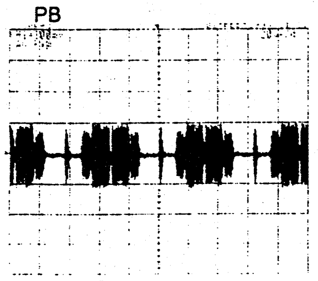
⓱ IC601 ㉞ 200 mV/DIV 20 μs/DIV
PB



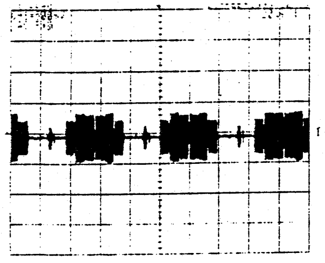
⓲ IC601 ㊱ 200 mV/DIV 20 μs/DIV
REC



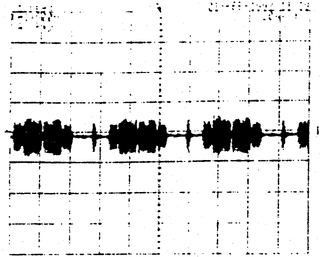
⓲ IC601 ㊱ 100 mV/DIV 20 μs/DIV
PB



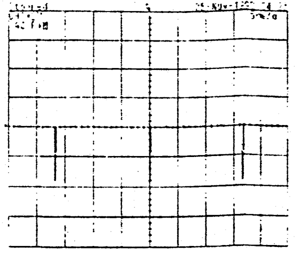
⓳ IC601 ㊳ 500 mV/DIV 20 μs/DIV
REC



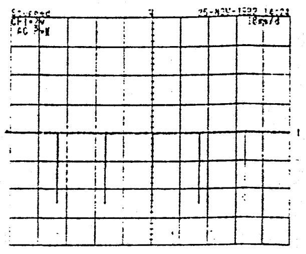
⓳ IC601 ㊳ 500 mV/DIV 20 μs/DIV
PB



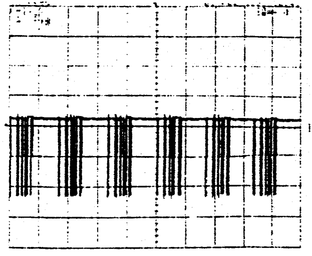
⓴ IC302 ⑤ 2 V/DIV 5 ms/DIV
REC/PB



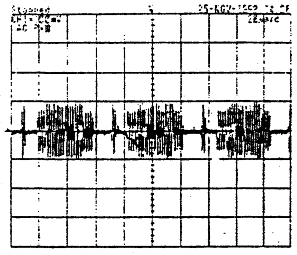
㉑ IC301 ⑪ 2 V/DIV 10 ms/DIV
REC/PB



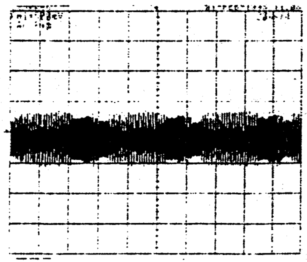
㉒ IC301 ㉒, ㉓ 2 V/DIV 10 ms/DIV
REC/PB



㉓ IC601 ⑬ 100 mV/DIV 20 μs/DIV
REC

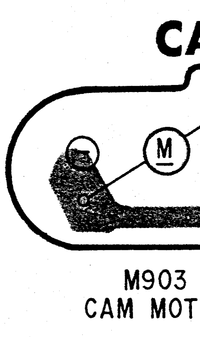


㉔ IC601 ⑮ 500 mV/DIV 20 μs/DIV
PB

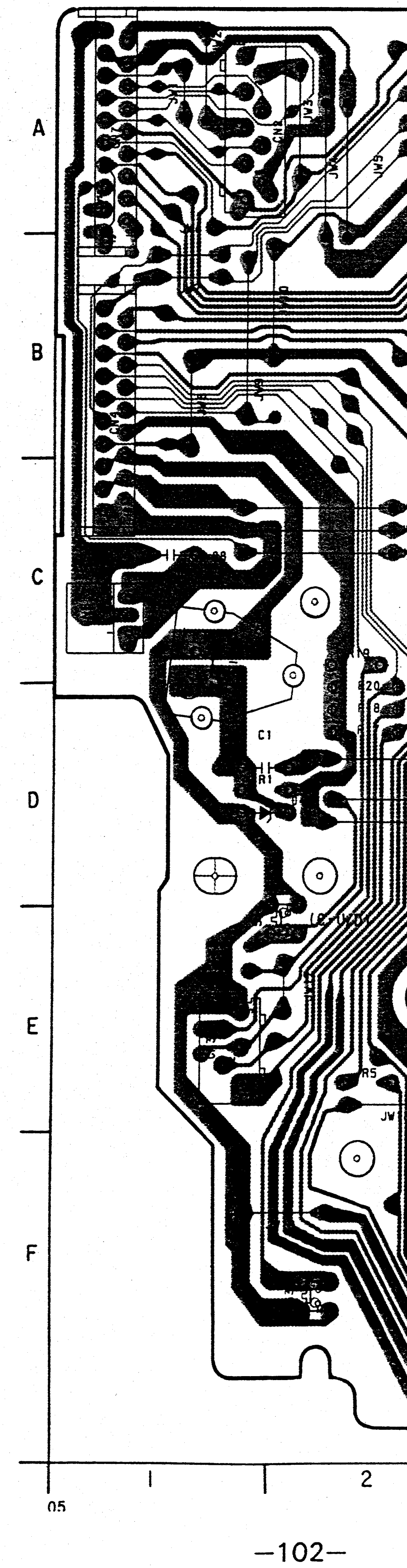


MD-56 (MECHANISM DRIVE), CA-41 (CAM MOTOR), CM

– Ref. No.: MD-56, CA-41 and CM-14 Boards; 3,000 series –



MD-56 BOARD



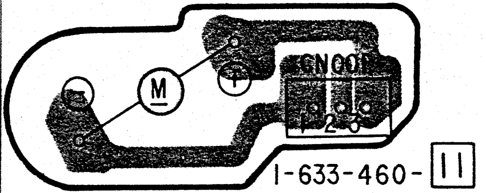
MD-56 BOARD

D1	D-5
D4	D-1
D5	D-9
D6	F-6
D7	F-5
IC2	A-5
PH1	F-4
PH2	F-6
Q1	C-1
Q2	C-9

AM MOTOR), CM-14 (LOADING MOTOR) PRINTED WIRING BOARDS

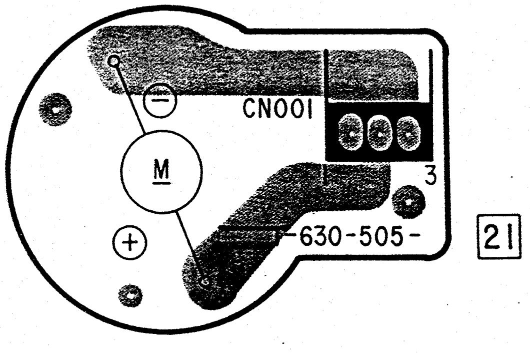
; 3,000 series –

CA-41 BOARD

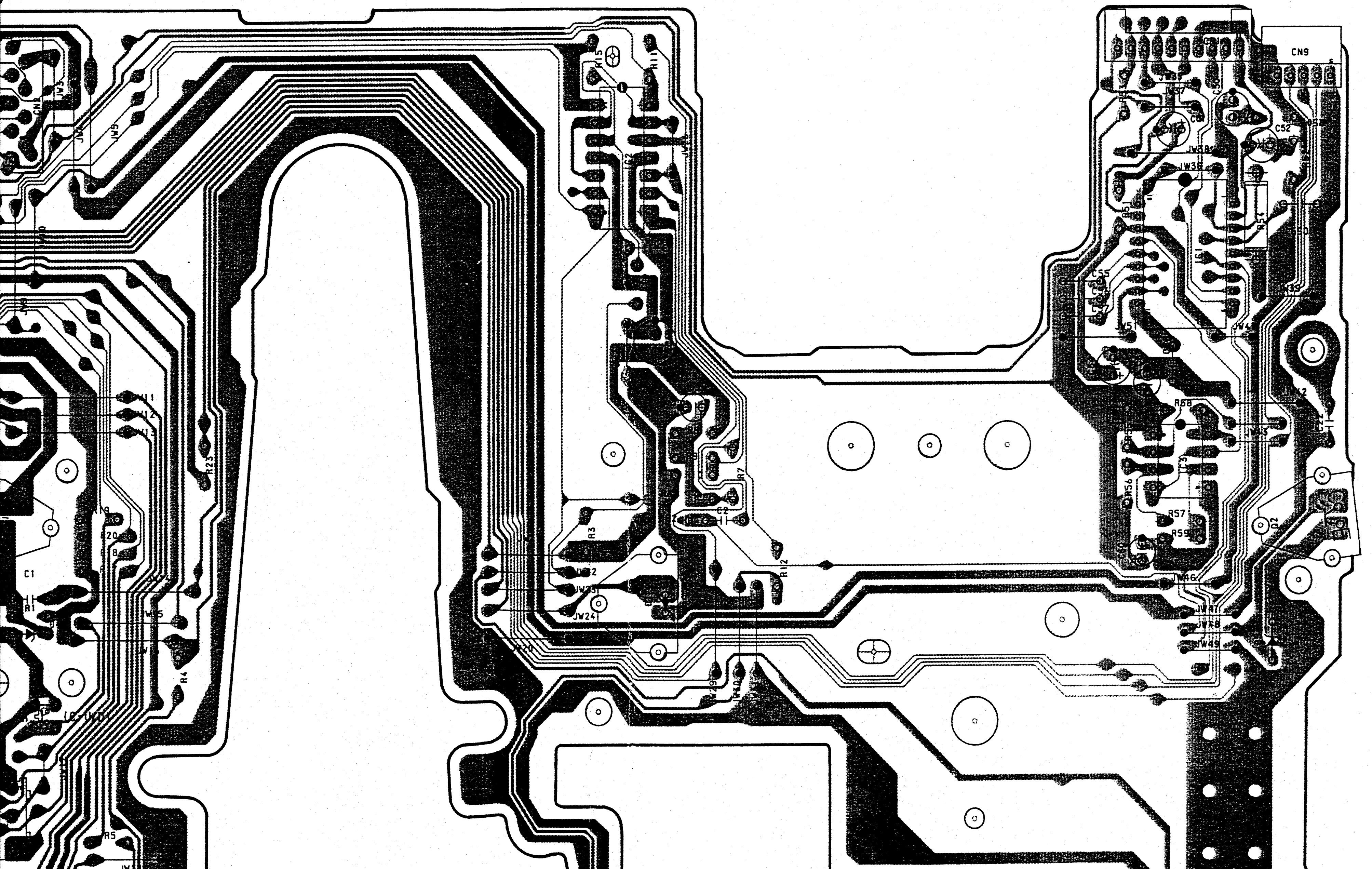

M
CN001
1 2 3
1-633-460-
11

M903
CAM MOTOR

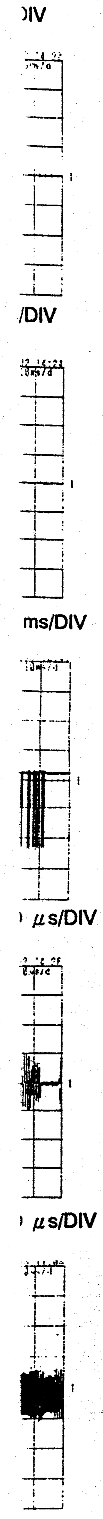
CM-14 BOARD


CN001
M
3
-630-505-
21

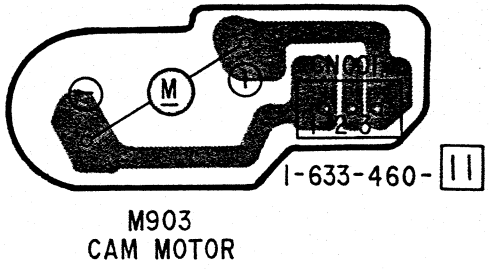
M904
LOADING
MOTOR


CN9
C52
JW38
R54
R57
R58
R59
JW46
JW47
JW48
JW49
R15
R11
R3
R7
R12
JW24
R23
R4
R5
C1
R19
R20
PH1
(REC PRF)
1-644-862-
22
2
3
4
5
6
7
8
9

MD-56 (MECHANISM DRIVE), CA-41 (CAM MOTOR), CM-14 (LOADING MOTOR) PRINTED WIRING BOARDS
– Ref. No.: MD-56, CA-41 and CM-14 Boards; 3,000 series –

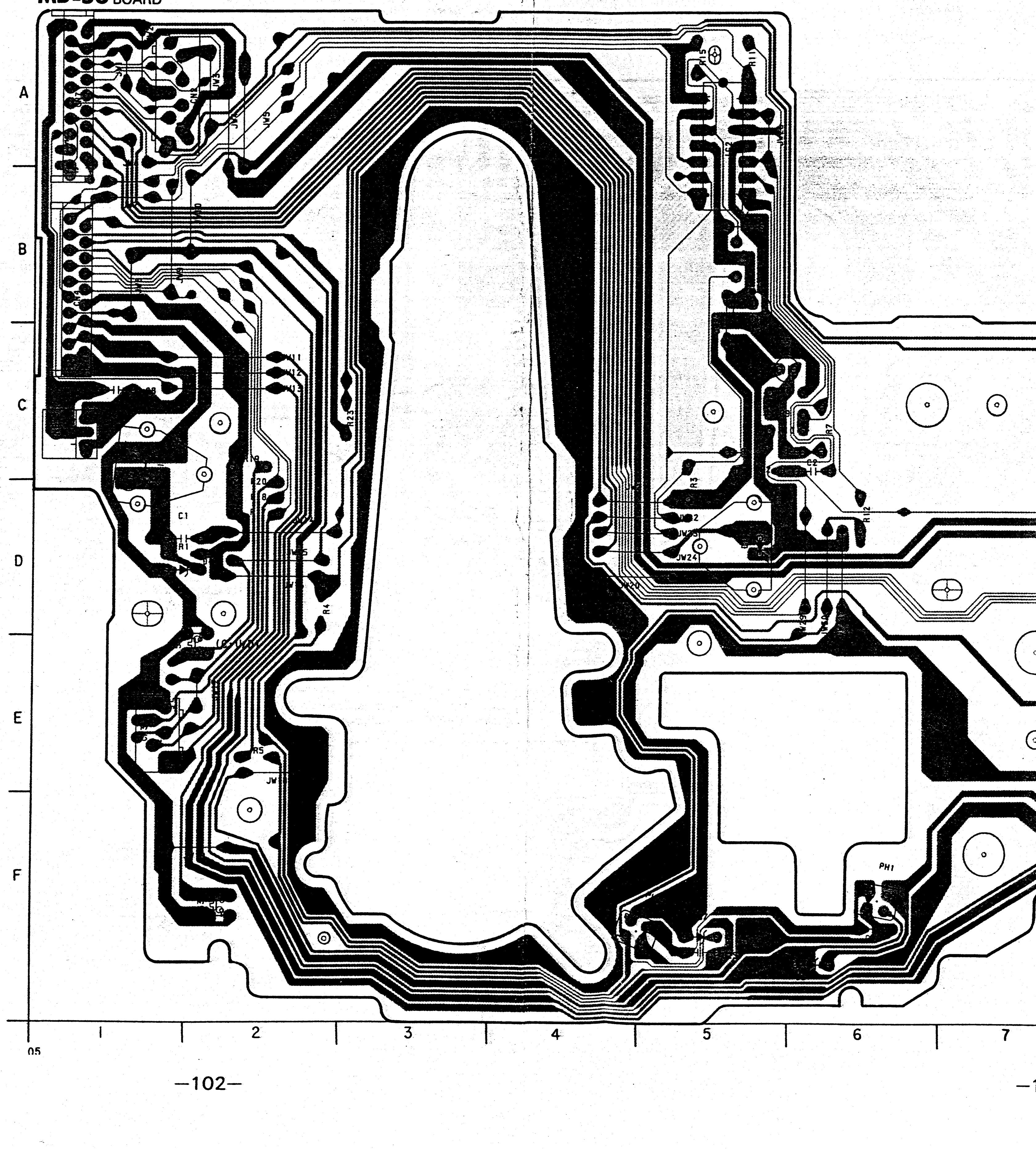


CA-41 BOARD



M
1-633-460-11
M903
CAM MOTOR

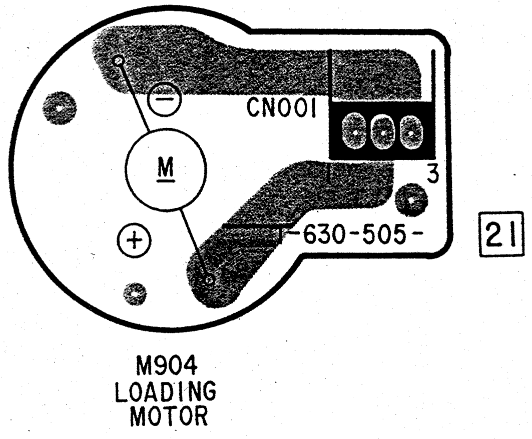
MD-56 BOARD



A
B
C
D
E
F
1
2
3
4
5
6
7
05
C1
R1
R3
R4
R5
R7
R12
R23
C2
PH1
JW11
JW12
JW13
JW22
JW23
JW24

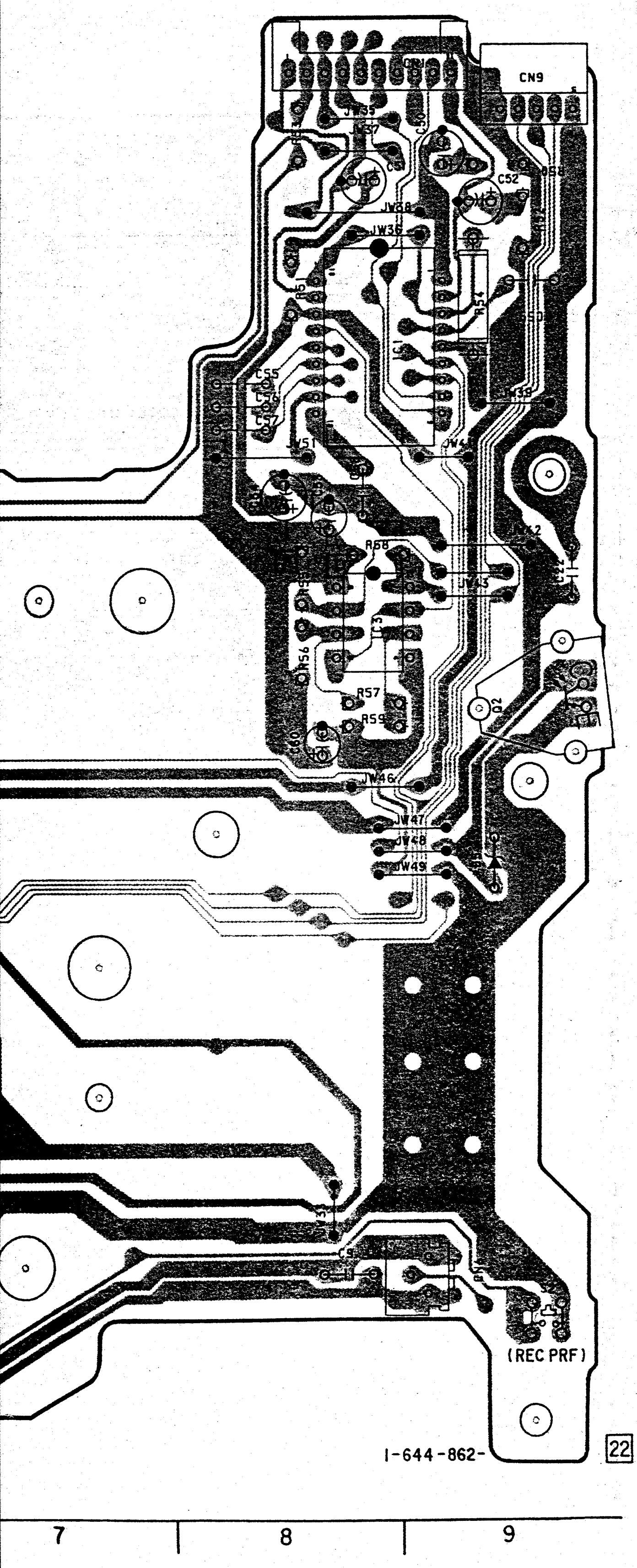
MD-56 BOARD	
D1	D-5
D4	D-1
D5	D-9
D6	F-6
D7	F-5
IC2	A-5
PH1	F-4
PH2	F-6
Q1	C-1
Q2	C-9

CM-14 BOARD


CN001
M
3
630-505-
21
M904
LOADING
MOTOR

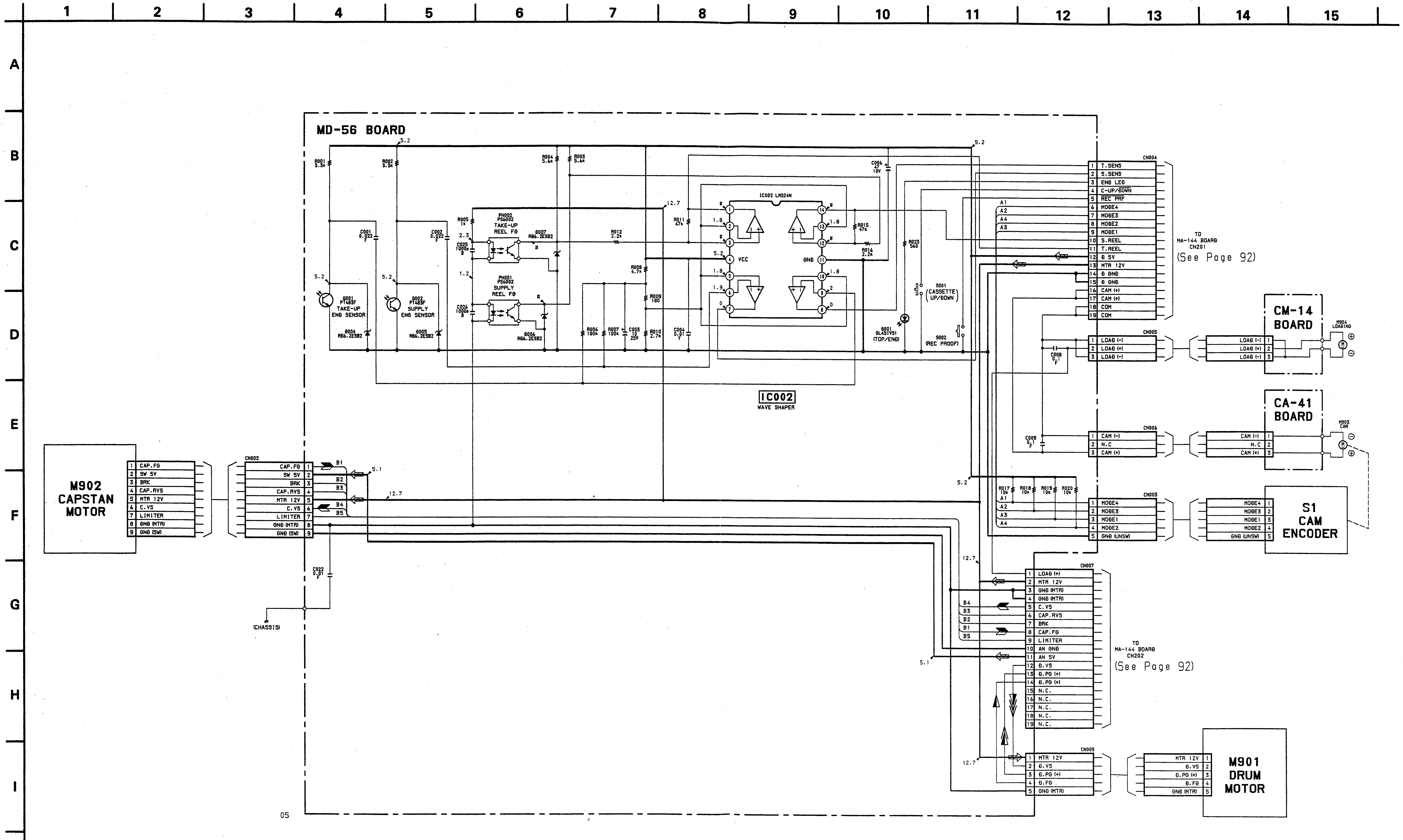
- **Signal path**

	REC	REC/PB	PB
Drum speed servo		>	
Drum phase servo		>>	
Drum servo (speed and phase)		>>>	
Capstan speed servo		▷	
Capstan phase servo	▶〉	▷〉	▷〉
Capstan servo (speed and phase)		▷〉〉	
Ref. signal	➤		▷


CN9
JW35
JW38
JW36
C52
C55
C56
C57
JW51
R58
JW43
R56
R57
R59
JW46
JW47
JW48
JW49
(REC PRF)
1-644-862-
22
7
8
9

MD-56 (MECHANISM DRIVE), CA-41 (CAM MOTOR), CM-14 (LOADING MOTOR) SCHEMATIC DIAGRAM

– Ref. No.: MD-56, CA-41 and CM-14 Boards; 3,000 series –

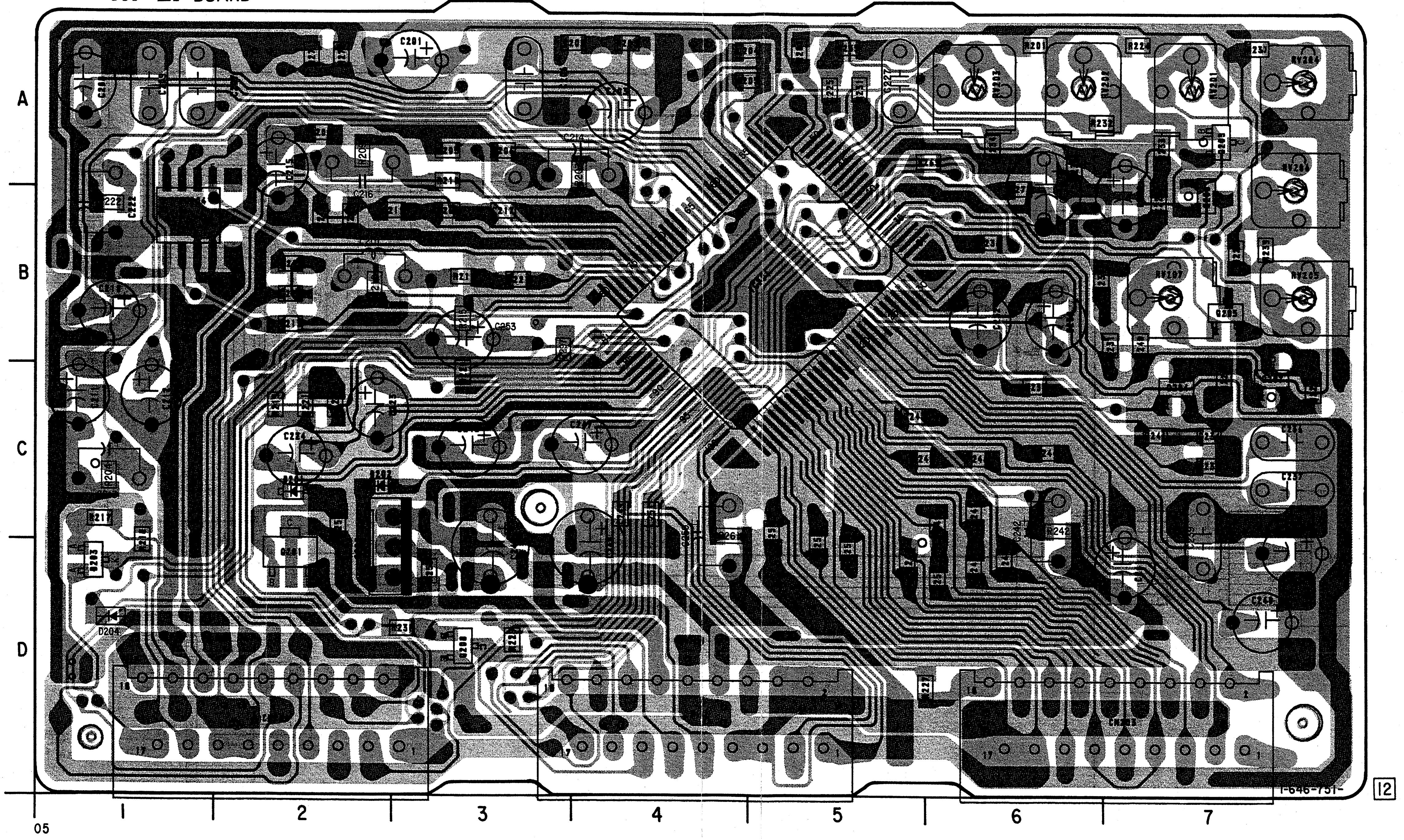

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
MD-56 BOARD
5.2
R001 3.3k
R002 3.3k
R004 5.6k
R003 5.6k
C001 0.022 F
C002 0.022 F
R005 1k
2.3
C025 1000p B
1.2
C026 1000p B
PH002 PS6002 TAKE-UP REEL FG
D007 RD6.2ESB2
PH001 PS6002 SUPPLY REEL FG
D006 RD6.2ESB2
Q001 PT483F TAKE-UP END SENSOR
D004 RD6.2ESB2
Q002 PT483F SUPPLY END SENSOR
D005 RD6.2ESB2
R012 2.2k
12.7
R008 4.7k
R009 180
R006 100k
R007 100k
C003 10 25V
R010 2.7k
C004 0.01 Y
R011 47k
IC002 LM324N
VCC
GND
1.8
1.9
0
2
#
R015 47k
R016 2.2k
C006 47 10V
R023 560
D001 GL451VS1 (TOP/END)
S001 (CASSETTE UP/DOWN)
S002 (REC PROOF)
IC002
WAVE SHAPER
CN004
T.SENS
S.SENS
END LED
C-UP/DOWN
REC PRF
MODE4
MODE3
MODE2
MODE1
S.REEL
T.REEL
D 5V
MTR 12V
D GND
D GND
CAM (+)
CAM (+)
COM
COM
A1
A2
A4
A3
TO MA-144 BOARD CN201
(See Page 92)
CN005
LOAD (-)
LOAD (+)
LOAD (-)
C008 0.1 F
CM-14 BOARD
M904 LOADING
CN006
CAM (-)
N.C
CAM (+)
C009 0.1 F
CA-41 BOARD
M903 CAM
R017 10k
R018 10k
R019 10k
R020 10k
CN003
MODE4
MODE3
MODE1
MODE2
GND (UNSW)
S1 CAM ENCODER
M902 CAPSTAN MOTOR
CAP.FG
SW 5V
BRK
CAP.RVS
MTR 12V
C.VS
LIMITER
GND (MTR)
GND (SW)
CN002
B1
B2
B3
B4
B5
5.1
C022 0.01 F
(CHASSIS)
CN007
LOAD (+)
MTR 12V
GND (MTR)
GND (MTR)
C.VS
CAP.RVS
BRK
CAP.FG
LIMITER
AN GND
AN 5V
D.VS
D.PG (+)
D.PG (+)
N.C.
N.C.
N.C.
N.C.
N.C.
TO MA-144 BOARD CN202
(See Page 92)
CN009
MTR 12V
D.VS
D.PG (+)
D.FG
GND (MTR)
M901 DRUM MOTOR
05

No mark : COMMON (REC)
* : PB
# : Impossible to measure the voltage at the marked points.

7 (HiFi AUDIO) PRINTED WIRING BOARD

f. No.: HF-27 Board; 4,000 series –

HF-27 BOARD



< DIODE >

D201	8-719-404-46	MA110
D202	8-719-404-46	MA110
D203	8-719-400-18	MA152WK

< IC >

IC201	8-759-160-54	XLH7772KS-VP
IC204	8-759-089-84	BA7755AF-T1

< TRANSISTOR >

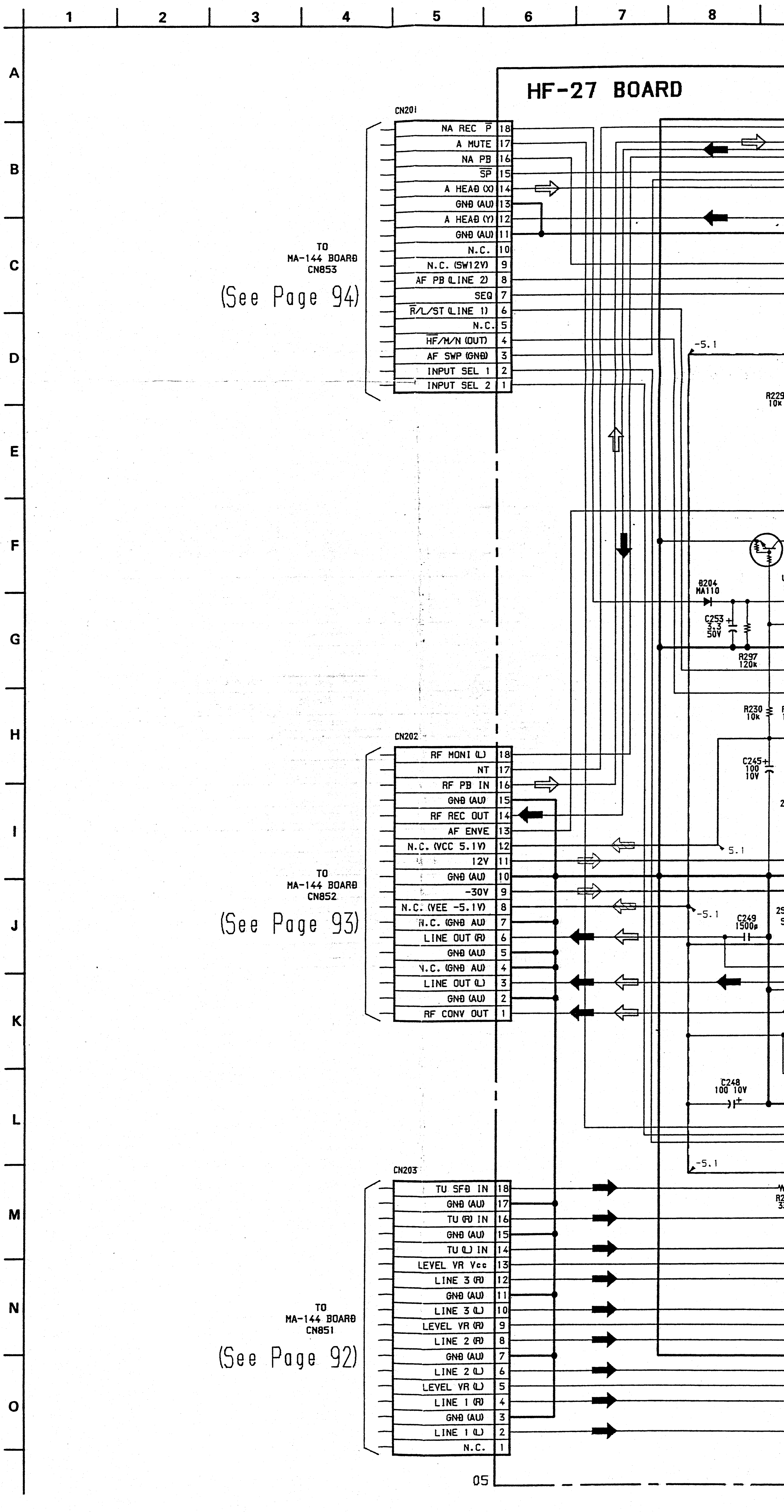
Q201	8-729-808-01	2SD1622-S
Q208	8-729-421-19	UN2213

HF-27 BOARD

D201	C-2
D202	C-2
D203	D-1
IC201	B-4
IC204	B-1
Q201	C-2
Q202	D-2
Q203	A-7
Q205	B-7
Q206	B-7
Q208	D-3

HF-27 (HiFi AUDIO) SCHEMATIC DIAGRAM

– Ref. No.: HF-27 Board; 4,000 series –

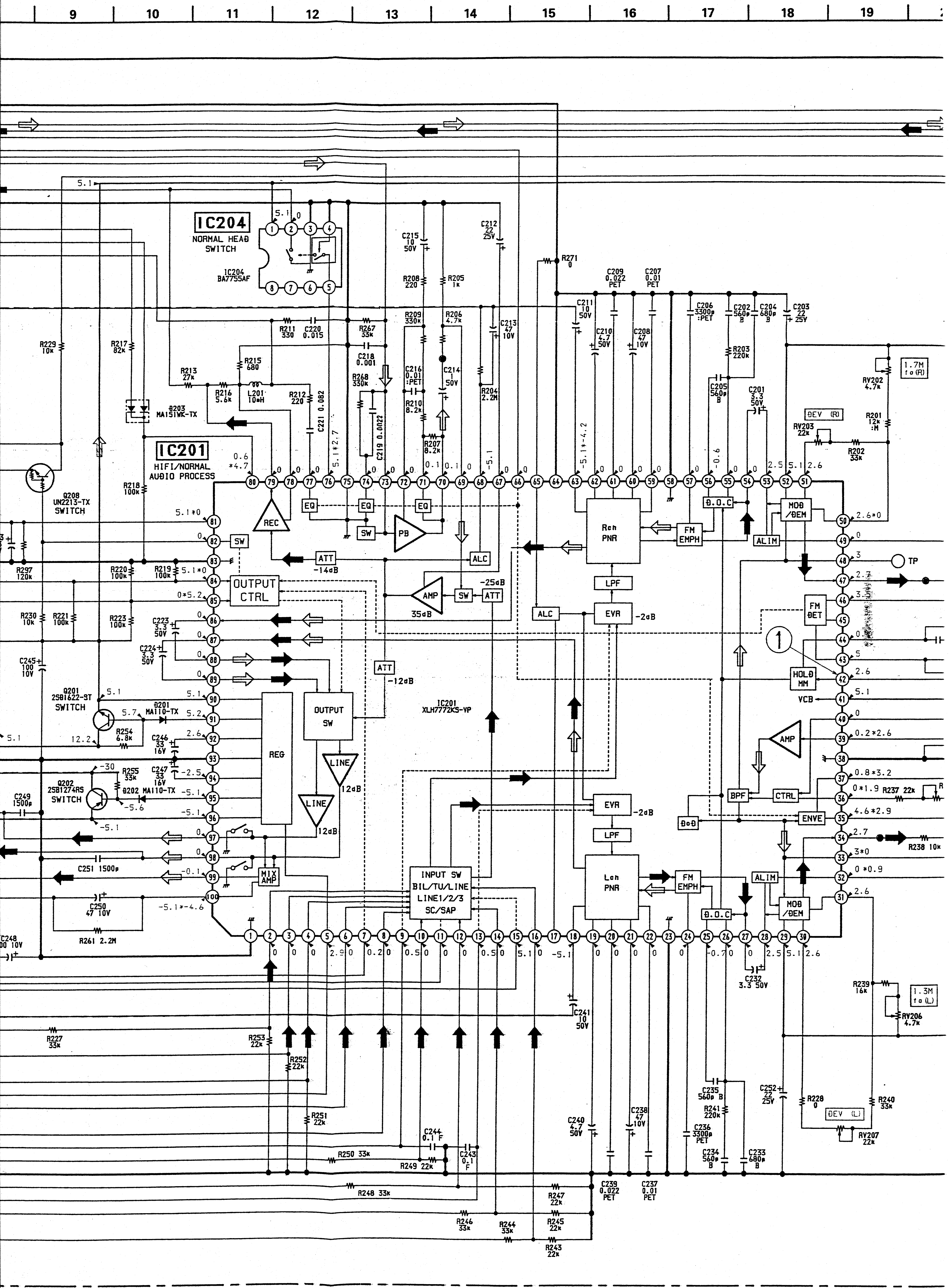


1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
HF-27 BOARD
CN201
NA REC P 18
A MUTE 17
NA PB 16
SP 15
A HEAD (X) 14
GND (AU) 13
A HEAD (Y) 12
GND (AU) 11
N.C. 10
N.C. (SW12V) 9
AF PB (LINE 2) 8
SEQ 7
R/L/ST (LINE 1) 6
N.C. 5
HF/H/N (OUT) 4
AF SWP (GND) 3
INPUT SEL 1 2
INPUT SEL 2 1
TO
MA-144 BOARD
CN853
(See Page 94)
-5.1
R229
10k
D204
MA110
C253
3.3
50V
R297
120k
R230
10k
C245
100
10V
CN202
RF MONI (L) 18
NT 17
RF PB IN 16
GND (AU) 15
RF REC OUT 14
AF ENVE 13
N.C. (VCC 5.1V) 12
12V 11
GND (AU) 10
-30V 9
N.C. (VEE -5.1V) 8
N.C. (GND AU) 7
LINE OUT (R) 6
GND (AU) 5
N.C. (GND AU) 4
LINE OUT (L) 3
GND (AU) 2
RF CONV OUT 1
TO
MA-144 BOARD
CN852
(See Page 93)
5.1
-5.1
C249
1500p
C248
100 10V
-5.1
CN203
TU SFD IN 18
GND (AU) 17
TU (R) IN 16
GND (AU) 15
TU (L) IN 14
LEVEL VR Vcc 13
LINE 3 (R) 12
GND (AU) 11
LINE 3 (L) 10
LEVEL VR (R) 9
LINE 2 (R) 8
GND (AU) 7
LINE 2 (L) 6
LEVEL VR (L) 5
LINE 1 (R) 4
GND (AU) 3
LINE 1 (L) 2
N.C. 1
TO
MA-144 BOARD
CN851
(See Page 92)
05

No mark : COMMON (REC)
 : PB
= : Impossible to measure the voltage at the marked points.

- Signal path

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡≫	➡⋙	➡
PB	⇨	⇨≫	⇨⋙	⇨

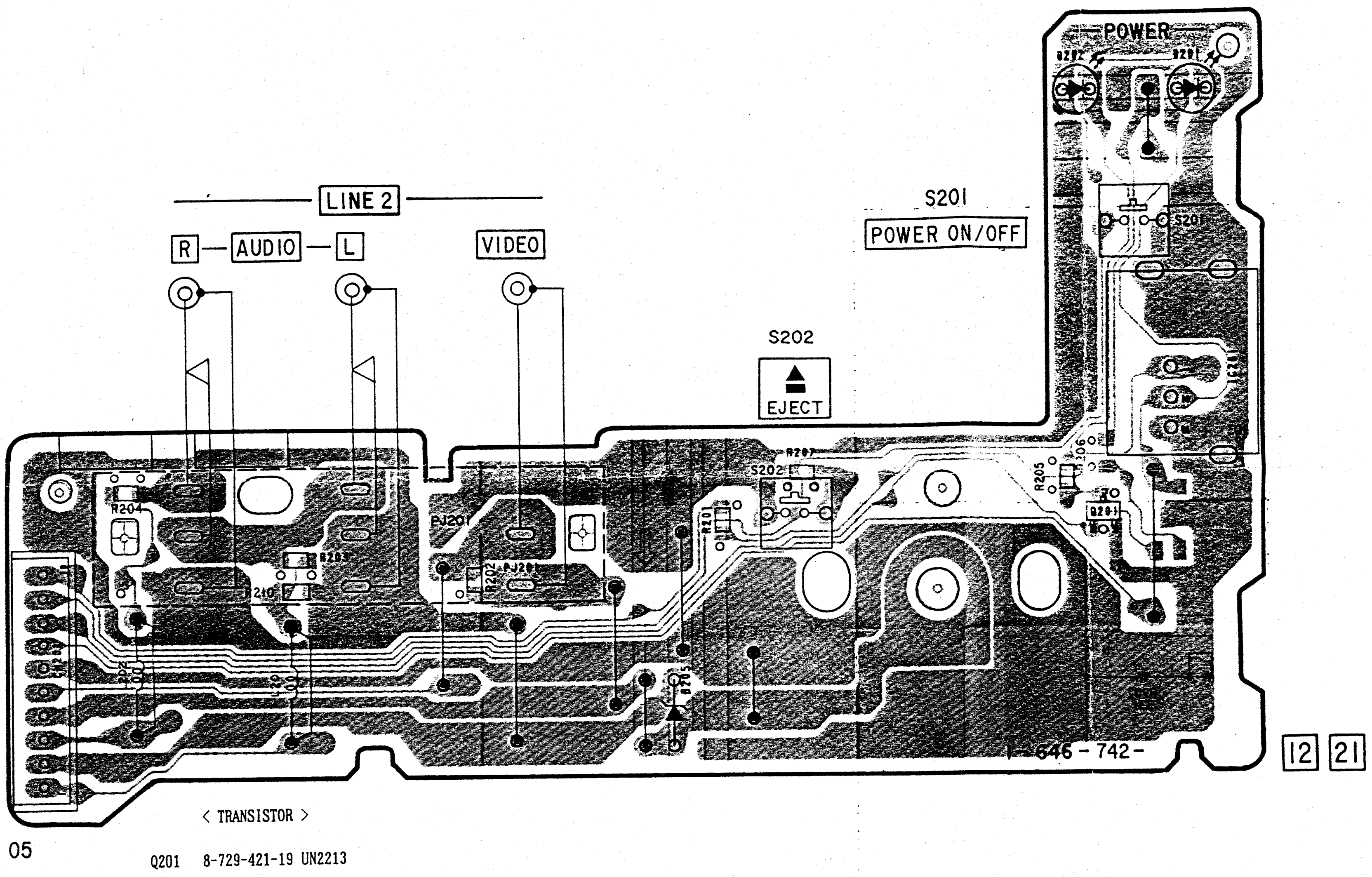


9
10
11
12
13
14
15
16
17
18
19
IC204
NORMAL HEAD SWITCH
IC204 BA7755AF
IC201
HIFI/NORMAL AUDIO PROCESS
IC201 XLH7772KS-VP
REC
PB
EQ
SW
ATT
-14dB
ALC
AMP
35dB
-25dB
-12dB
OUTPUT CTRL
OUTPUT SW
REG
LINE
12dB
MIX AMP
INPUT SW BIL/TU/LINE LINE1/2/3 SC/SAP
Rch PNR
Lch PNR
LPF
EVR
-2dB
FM EMPH
D.O.C
ALIM
MOD /DEM
FM DET
HOLD MM
BPF
CTRL
ENVE
DoD
TP
VCB
1
1.7M f o (R)
1.3M f o (L)
DEV (R)
DEV (L)
Q208 UN2213-TX SWITCH
Q201 2SB1622-ST SWITCH
Q202 2SB1274RS SWITCH
D203 MA151WK-TX
D201 MA110-TX
D202 MA110-TX
R229 10k
R217 82k
R213 27k
R216 5.6k
R215 680
L201 10mH
R211 330
C220 0.015
R212 220
C221 0.082
R267 33k
C218 0.001
R268 330k
C219 0.0022
R209 330k
R208 220
C215 10 50V
C216 0.01 PET
R210 8.2k
R207 8.2k
R206 4.7k
R205 1k
C214 1 50V
C212 22 25V
C213 47 10V
R204 2.2M
R271 0
C211 10 50V
C210 4.7 50V
C209 0.022 PET
C208 47 10V
C207 0.01 PET
C206 3300p PET
C202 560p B
C204 680p B
C203 22 25V
R203 220k
C205 560p B
C201 3.3 50V
RV202 4.7k
R201 12k M
RV203 22k
R202 33k
R218 100k
R297 120k
R220 100k
R219 100k
R230 10k
R221 100k
R223 100k
C223 3.3 50V
C224 3.3 50V
C245 100 10V
R254 6.8k
C246 33 16V
R255 33k
C247 33 16V
C249 1500p
C251 1500p
C250 47 10V
R261 2.2M
C248 100 10V
R227 33k
R253 22k
R252 22k
R251 22k
R250 33k
C244 0.1 F
C243 0.1 F
R249 22k
R248 33k
R247 22k
R246 33k
R244 33k
R245 22k
R243 22k
C241 10 50V
C240 4.7 50V
C239 0.022 PET
C238 47 10V
C237 0.01 PET
C235 560p B
R241 220k
C236 3300p PET
C234 560p B
C233 680p B
C232 3.3 50V
C252 22 25V
R228 0
R240 33k
RV207 22k
R239 16k
RV206 4.7k
R237 22k
R238 10k
5.1
0.6 *4.7
5.1*0
0*5.2
5.1*2.7
-5.1*-4.2
-5.1*-4.6
2.6*0
0.2*2.6
0.8*3.2
0*1.9
4.6*2.9
3*0
0*0.9
-30
-5.6
12.2
5.7

-171 (POWER/EJECT SWITCHES), MF-172 (MODE CONTROL), MF-173 (CONTROL SWITCHES) PRINTED WIRING BOARDS

Ref. No.: MF-171, MF-172 and MF-173 Boards; 5,000 series –

MF-171 BOARD



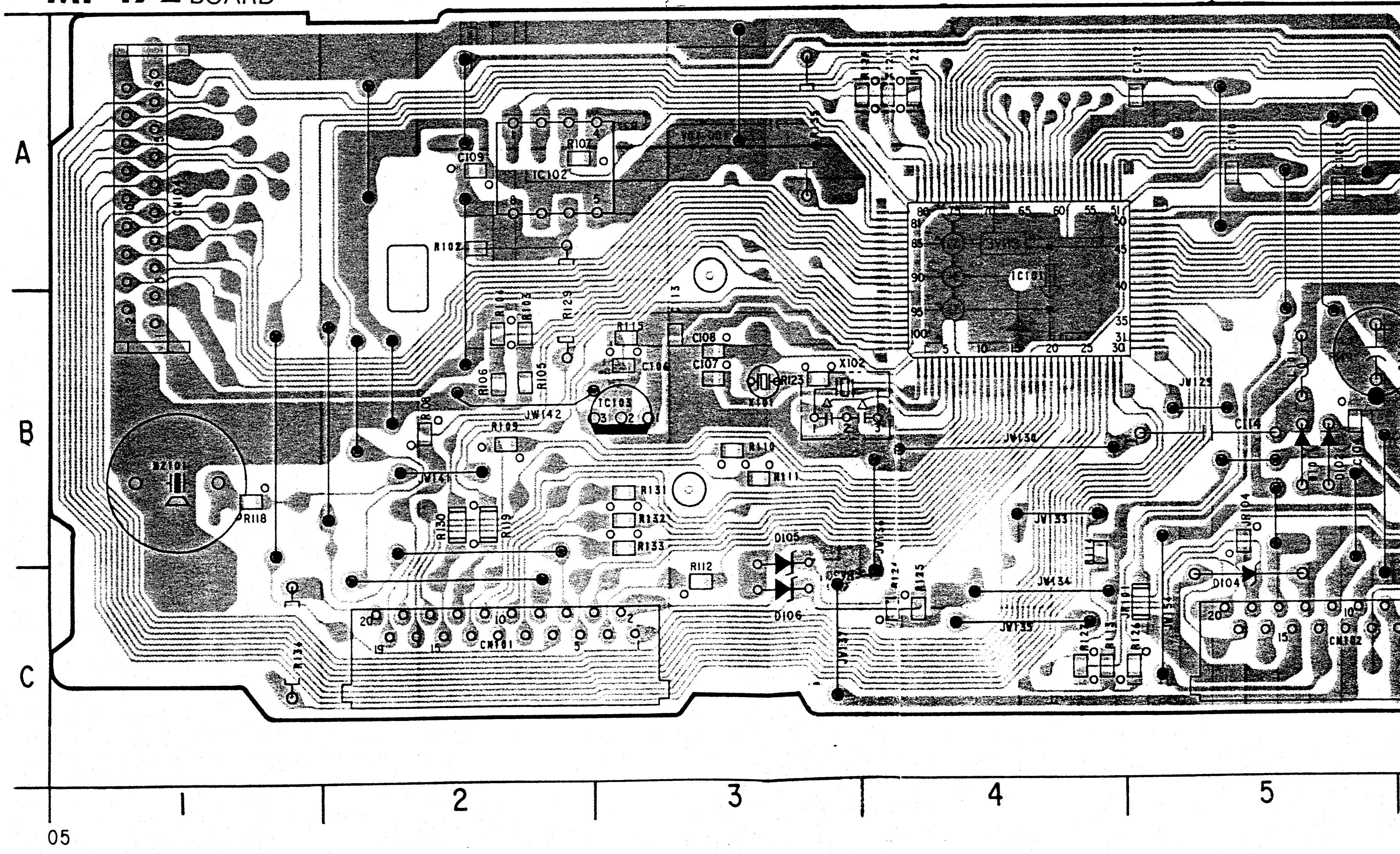
POWER
D202
D201
S201
POWER ON/OFF
LINE 2
R
AUDIO
L
VIDEO
S202
EJECT
R204
R203
PJ201
PJ202
S202
R207
R201
R205
R206
Q201
1-646-742-
12
21
05

< TRANSISTOR >

Q201 8-729-421-19 UN2213

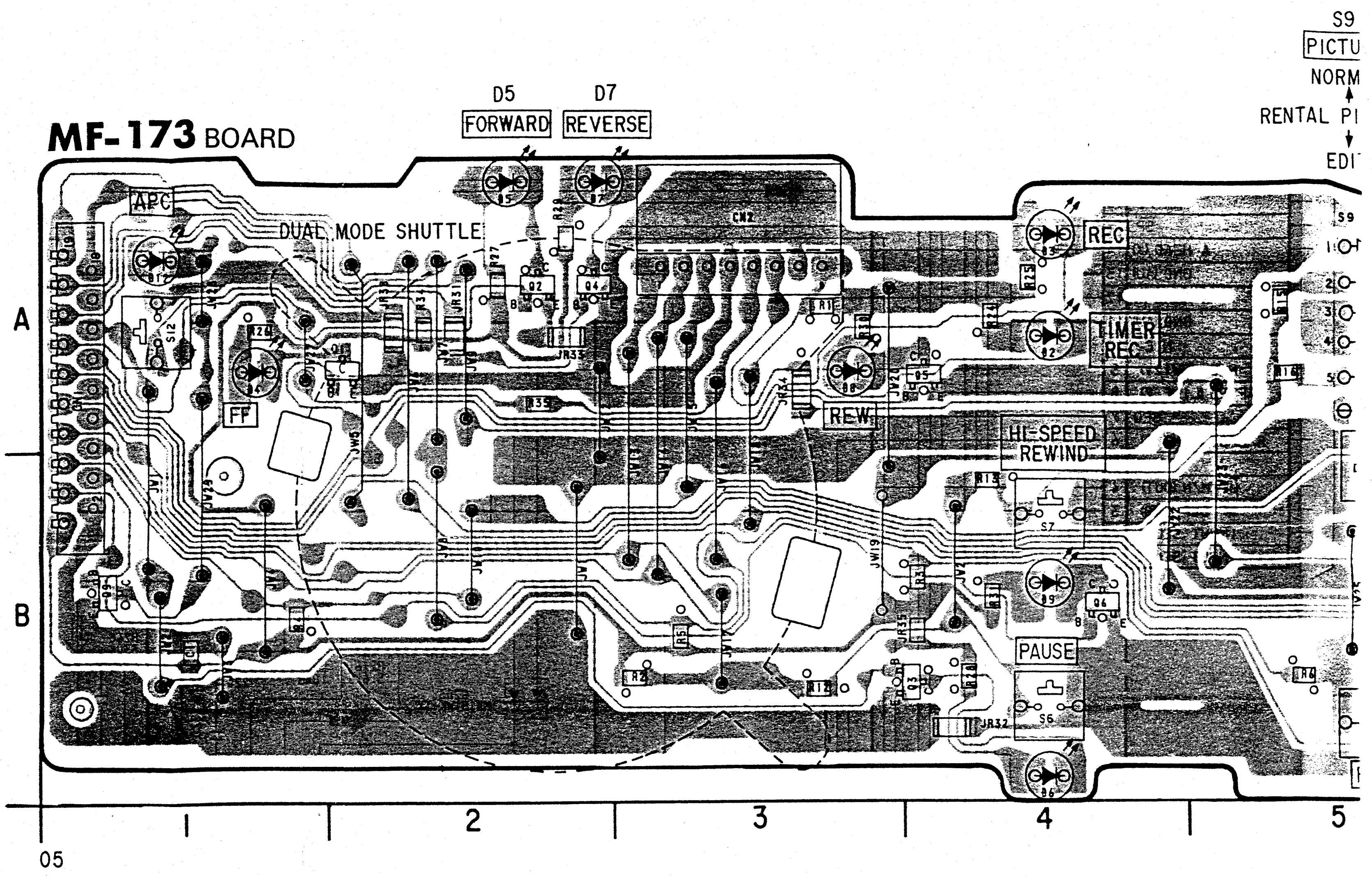
MF-172 BOARD

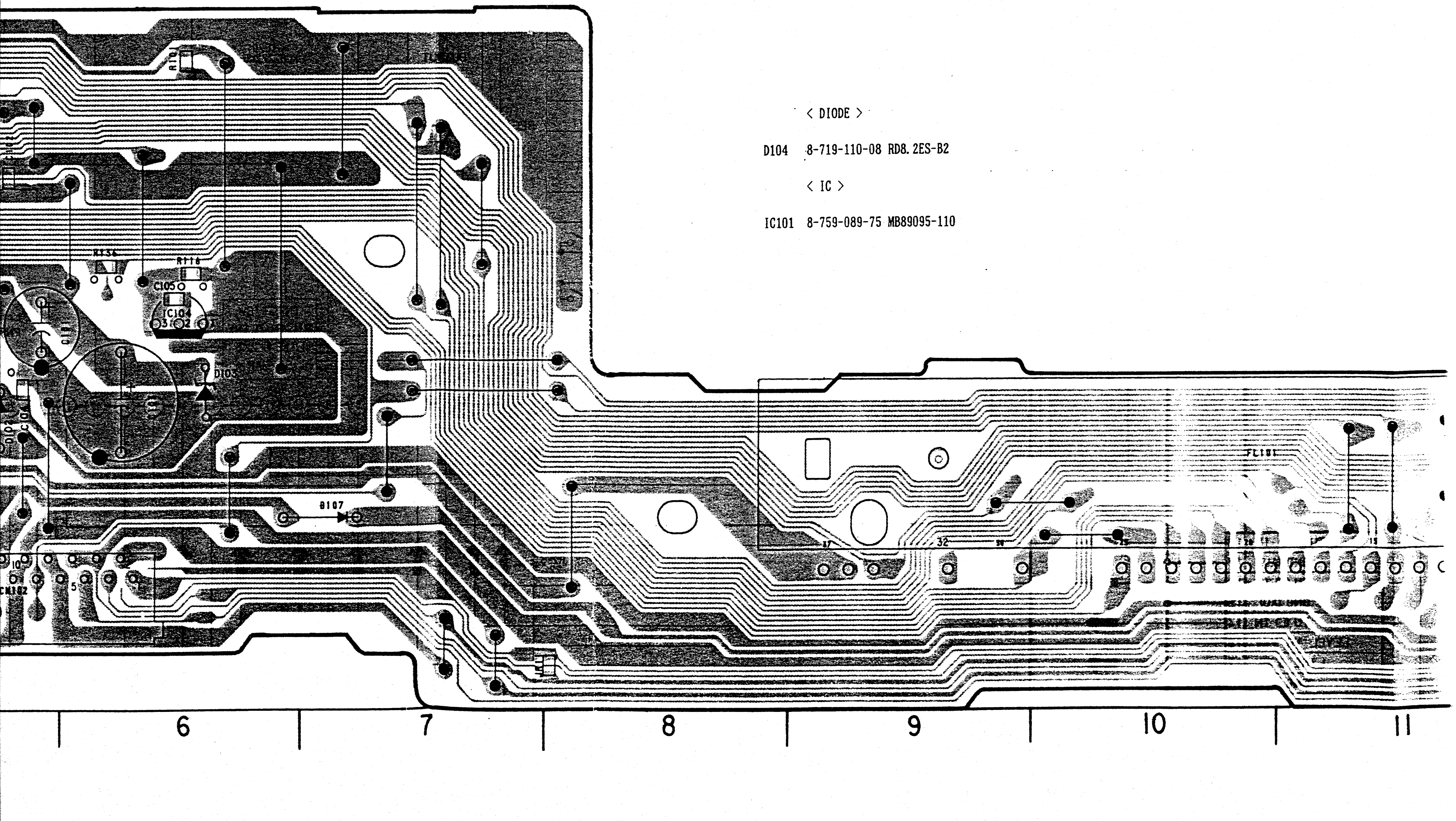
MF-172 BOARD	
D101	B-5
D102	B-5
D104	C-5
D107	C-7
IC101	A-4
IC102	A-2
IC103	B-6
IC104	B-6



A
B
C
1
2
3
4
5
05
IC101
IC102
IC103
C109
R107
R102
C108
C107
X102
R125
R109
JW142
JW141
BZ101
R118
R131
R132
R133
R130
R119
R110
R111
R112
D105
D106
D104
JW133
JW134
JW135
JW136
JW125
CN101
CN102
R136

MF-173 BOARD


D5
D7
FORWARD
REVERSE
S9
PICTU
NORM
RENTAL PI
EDI
APC
DUAL MODE SHUTTLE
FF
REW
REC
TIMER REC
HI-SPEED REWIND
PAUSE
A
B
1
2
3
4
5
05


R116
C105
IC104
D103
D107
CN302
FL101
32
6
7
8
9
10
11

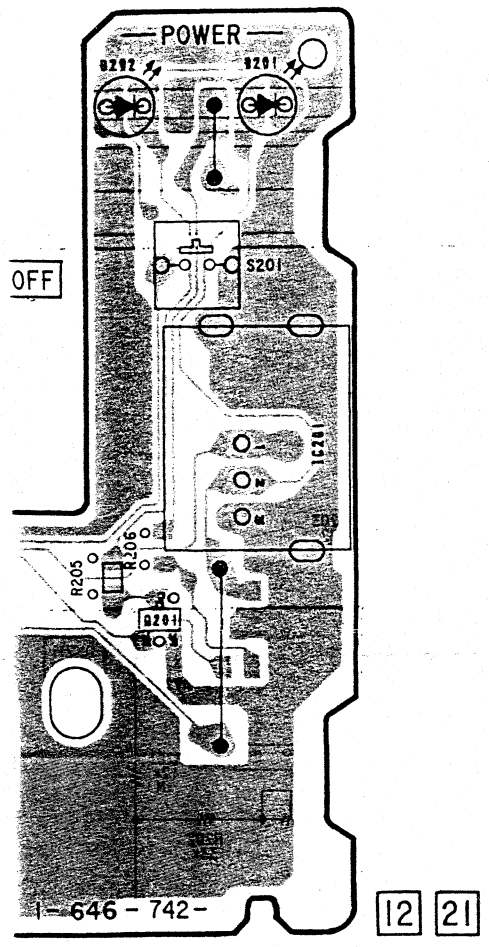
< DIODE >

D104 8-719-110-08 RD8.2ES-B2

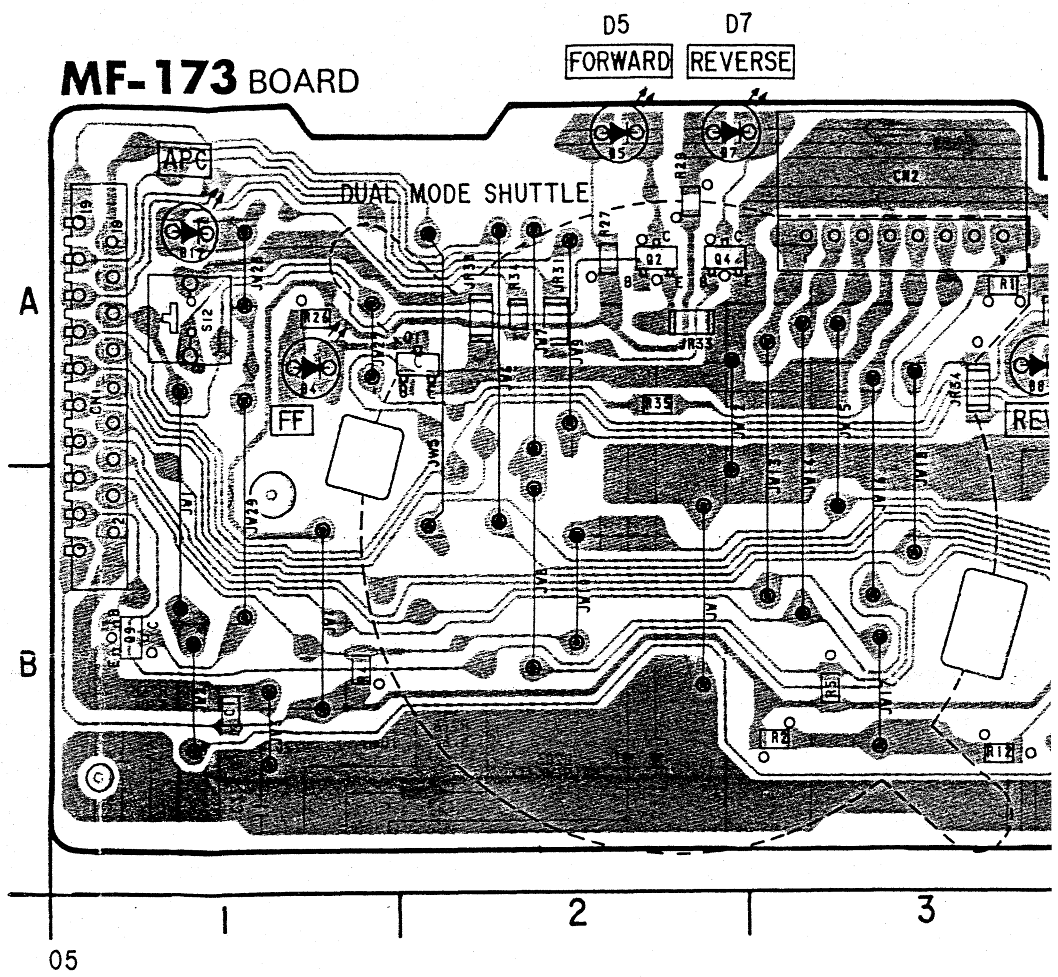
< IC >

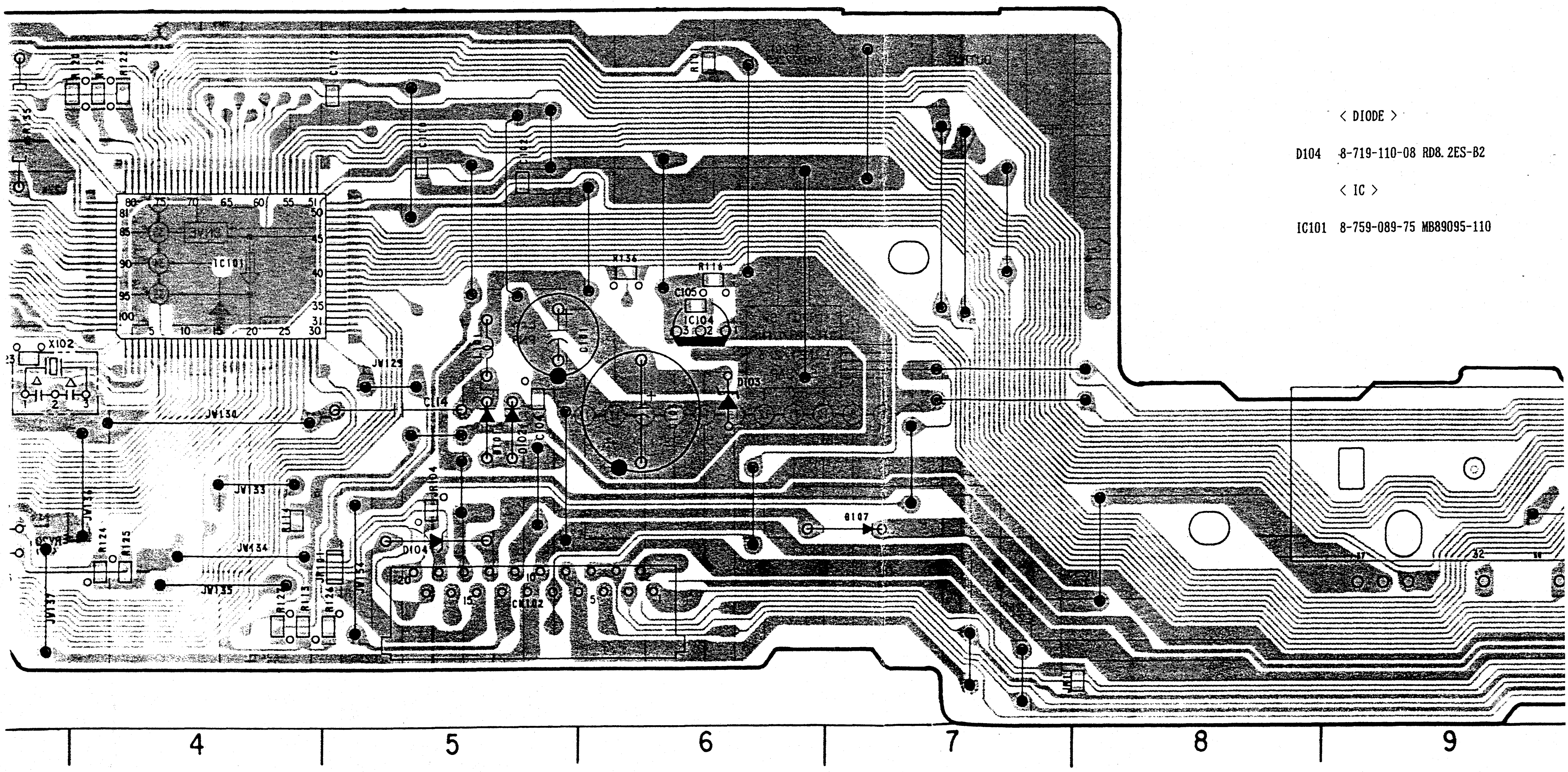
IC101 8-759-089-75 MB89095-110

MF-171 BOARD


POWER
D202
D201
S201
IC201
OFF
R205
R206
Q201
1-646-742-
12
21

MF-173 BOARD


D5
FORWARD
D7
REVERSE
APC
DUAL MODE SHUTTLE
FF
REV
CN2
Q2
Q4
A
B
1
2
3
05

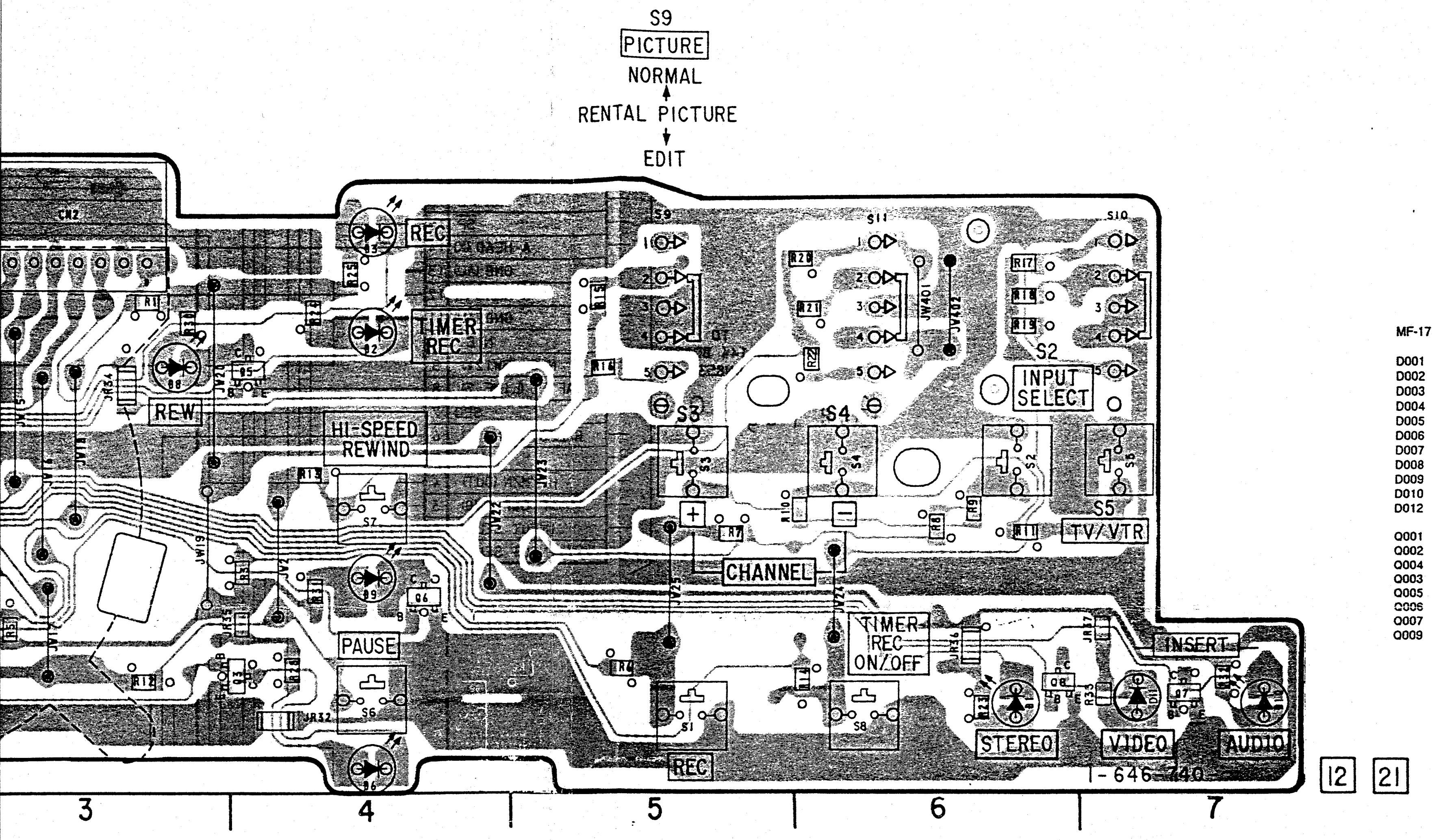

IC101
X102
JW130
JW133
JW134
JW135
JW137
JW129
C114
R136
R116
C105
IC104
D103
D104
D107
CN102
R124
R125
4
5
6
7
8
9

< DIODE >

D104 8-719-110-08 RD8.2ES-B2

< IC >

IC101 8-759-089-75 MB89095-110


S9
PICTURE
NORMAL
RENTAL PICTURE
EDIT
REC
TIMER REC
REW
HI-SPEED REWIND
PAUSE
CHANNEL
S3
S4
S2
INPUT SELECT
S5
TV/VTR
TIMER REC ON/OFF
INSERT
REC
STEREO
VIDEO
AUDIO
1-646-740
12
21
3
4
5
6
7

MF-173 BOARD

D001	B-6
D002	A-4
D003	A-4
D004	A-1
D005	A-2
D006	B-4
D007	A-2
D008	A-3
D009	B-4
D010	B-7
D012	A-1
Q001	A-2
Q002	A-2
Q004	B-4
Q003	A-2
Q005	A-4
Q006	B-4
Q007	B-7
Q009	B-1

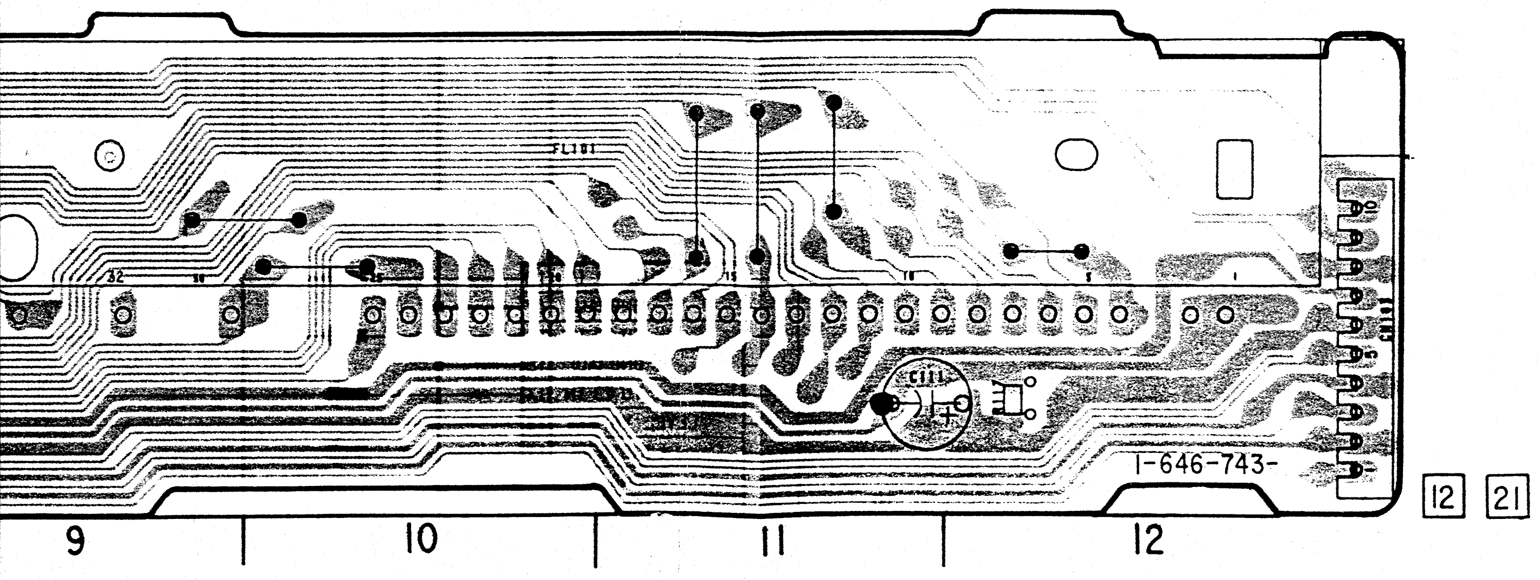
< TRANSISTOR >

Q001	8-729-421-19	UN2213
Q002	8-729-421-19	UN2213
Q003	8-729-421-19	UN2213
Q004	8-729-421-19	UN2213
Q005	8-729-421-19	UN2213
Q006	8-729-421-19	UN2213
Q007	8-729-421-19	UN2213
Q008	8-729-421-19	UN2213
Q009	8-729-421-19	UN2213

>

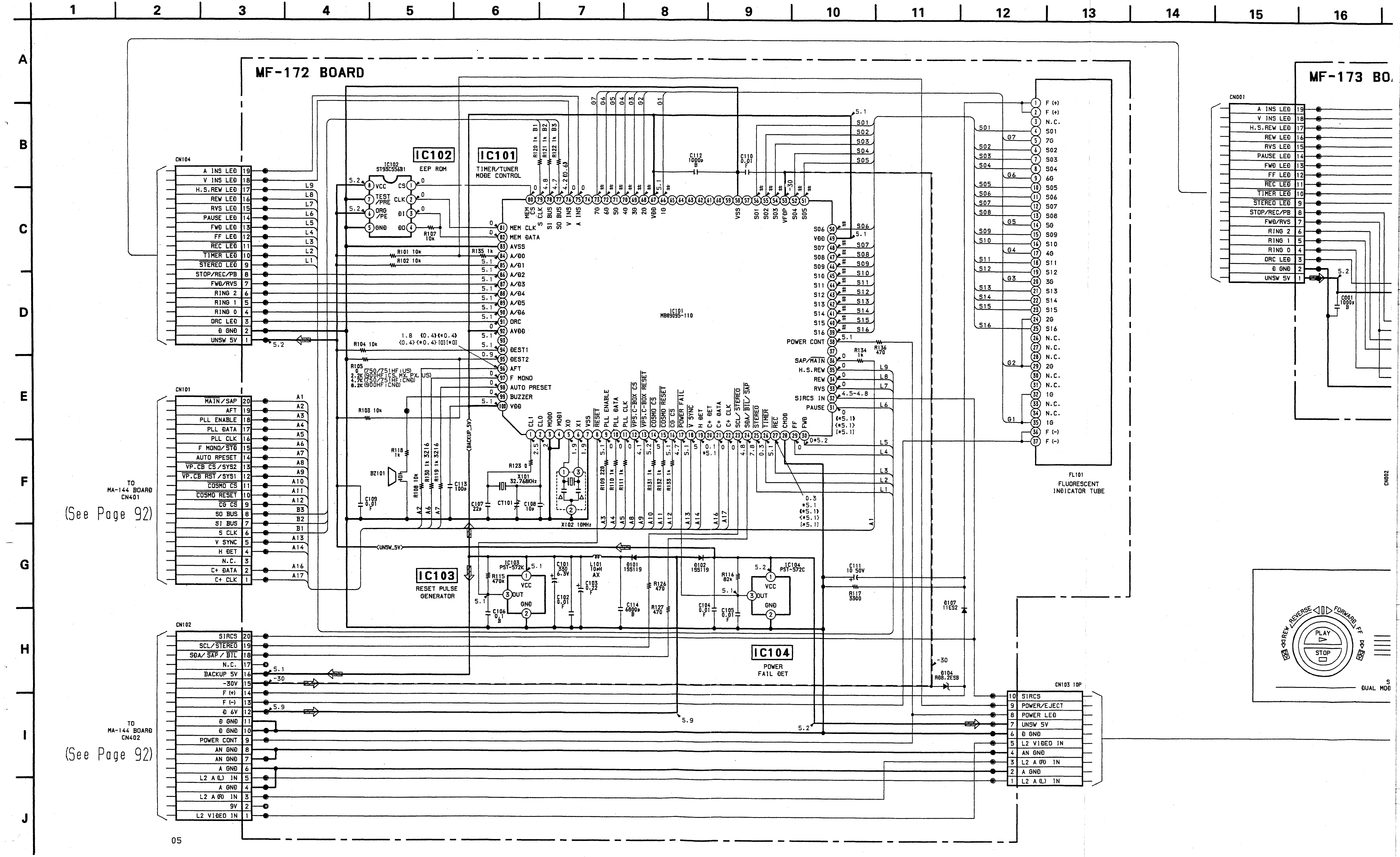
-08 RD8.2ES-B2

-75 MB89095-110

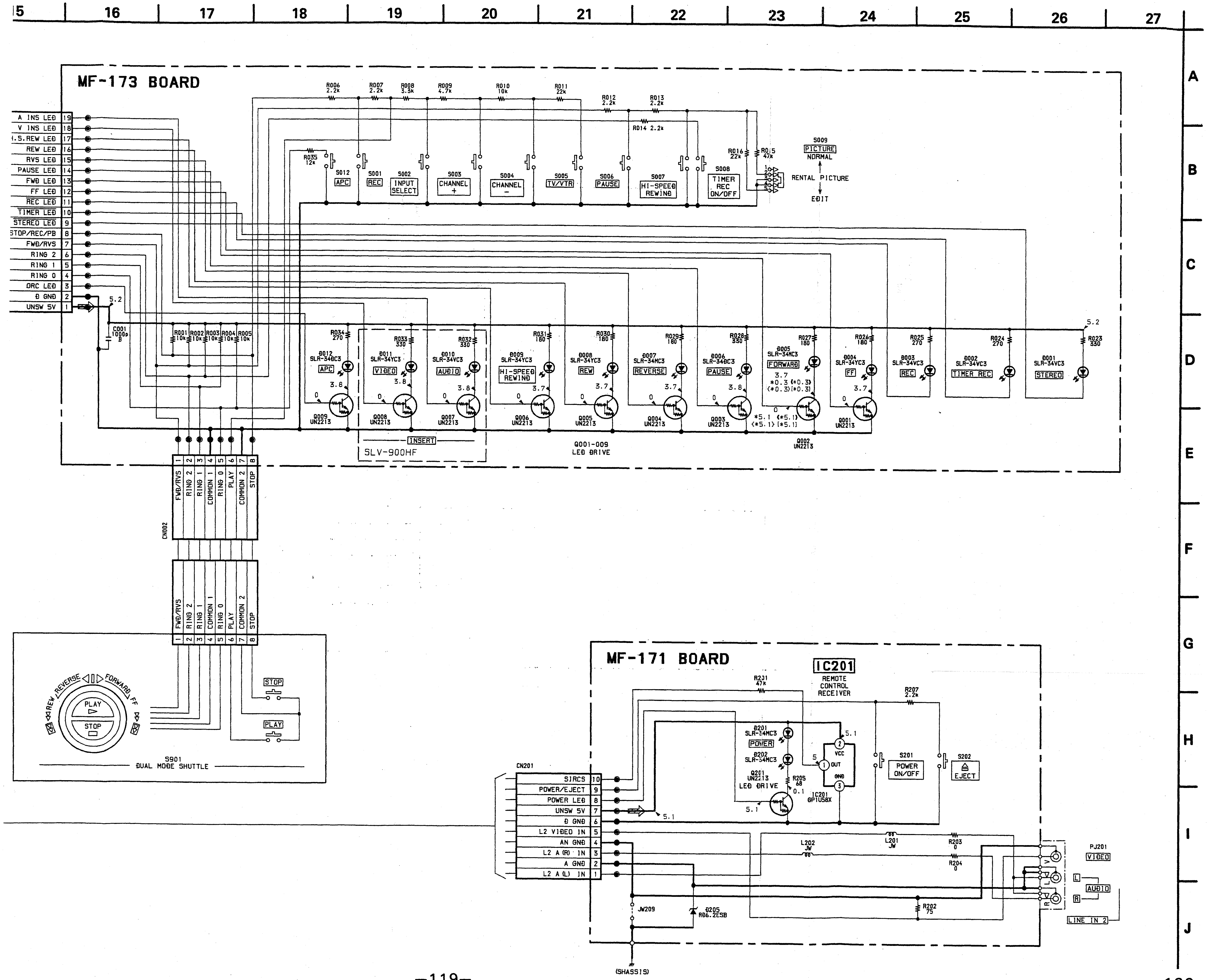

FL101
C111
CN101
1-646-743-
12
21
9
10
11
12

MF-171 (POWER/EJECT SWITCHES), MF-172 (MODE CONTROL), MF-173 (CONTROL SWITCHES) SCHEMATIC DIAGRAM

– Ref. No.: MF-171, MF-172 and MF-173 Boards; 5,000 series –

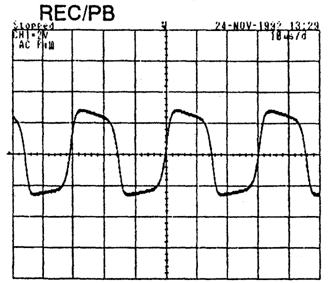


MF-172 BOARD
MF-173 BO
IC101
TIMER/TUNER MODE CONTROL
IC101 MB89095-110
IC102
EEP ROM
IC102 ST93CS56B1
IC103
RESET PULSE GENERATOR
IC103 PST-572K
IC104
POWER FAIL DET
IC104 PST-572C
FL101
FLUORESCENT INDICATOR TUBE
CN104
CN101
CN102
CN103 10P
CN001
TO MA-144 BOARD CN401
(See Page 92)
TO MA-144 BOARD CN402
(See Page 92)
A INS LED
V INS LED
H.S.REW LED
REW LED
RVS LED
PAUSE LED
FWD LED
FF LED
REC LED
TIMER LED
STEREO LED
STOP/REC/PB
FWD/RVS
RING 2
RING 1
RING 0
ORC LED
D GND
UNSW 5V
MAIN/SAP
AFT
PLL ENABLE
PLL DATA
PLL CLK
F MONO/STD
AUTO RPESET
VP.CB CS/SYS2
VP.CB RST/SYS1
COSMO CS
COSMO RESET
CG CS
S0 BUS
S1 BUS
S CLK
V SYNC
H DET
N.C.
C+ DATA
C+ CLK
SIRCS
SCL/STEREO
SDA/SAP/BIL
BACKUP 5V
-30V
F (+)
F (–)
D 6V
POWER CONT
AN GND
A GND
L2 A (L) IN
L2 A (R) IN
9V
L2 VIDEO IN
POWER/EJECT
POWER LED
L2 VIDEO IN
MEM CLK
MEM DATA
AVSS
A/D0
A/D1
A/D2
A/D3
A/D4
A/D5
A/D6
ORC
AVDD
DEST1
DEST2
AFT
F MONO
AUTO PRESET
BUZZER
VDD
POWER CONT
SAP/MAIN
H.S.REW
REW
RVS
SIRCS IN
PAUSE
BZ101
X101 32.768KHz
X102 10MHz
D101 1SS119
D102 1SS119
D107 11ES2
D104 RD8.2ESB
L101 10μH
C111 10 50V
R117 3300
(BACKUP_5V)
(UNSW_5V)
PLAY
STOP
REW
REVERSE
FORWARD
FF
DUAL MOD
05

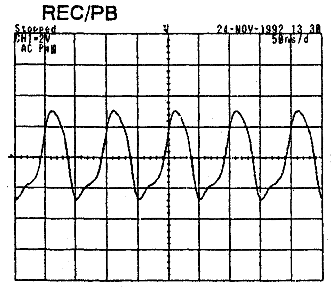

15
16
17
18
19
20
21
22
23
24
25
26
27
A
B
C
D
E
F
G
H
I
J
MF-173 BOARD
A INS LED 19
V INS LED 18
S.REW LED 17
REW LED 16
RVS LED 15
PAUSE LED 14
FWD LED 13
FF LED 12
REC LED 11
TIMER LED 10
STEREO LED 9
STOP/REC/PB 8
FWD/RVS 7
RING 2 6
RING 1 5
RING 0 4
DRC LED 3
D GND 2
UNSW 5V 1
5.2
C001 1000p B
R001 10k
R002 10k
R003 10k
R004 10k
R005 10k
R006 2.2k
R007 2.2k
R008 3.3k
R009 4.7k
R010 10k
R011 22k
R012 2.2k
R013 2.2k
R014 2.2k
R035 12k
R016 22k
R015 47k
S012 APC
S001 REC
S002 INPUT SELECT
S003 CHANNEL +
S004 CHANNEL −
S005 TV/VTR
S006 PAUSE
S007 HI-SPEED REWIND
S008 TIMER REC ON/OFF
S009 PICTURE NORMAL
RENTAL PICTURE
EDIT
R034 270
D012 SLR-34DC3 APC
R033 330
D011 SLR-34YC3 VIDEO
R032 330
D010 SLR-34VC3 AUDIO
R031 180
D009 SLR-34YC3 HI-SPEED REWIND
R030 180
D008 SLR-34YC3 REW
R029 180
D007 SLR-34MC3 REVERSE
R028 330
D006 SLR-34DC3 PAUSE
R027 180
D005 SLR-34MC3 FORWARD
R026 180
D004 SLR-34YC3 FF
R025 270
D003 SLR-34VC3 REC
R024 270
D002 SLR-34VC3 TIMER REC
R023 330
D001 SLR-34VC3 STEREO
3.8
3.7
0
*0.3 (*0.3)
(*0.3) [*0.3]
*5.1 (*5.1)
(*5.1) [*5.1]
Q009 UN2213
Q008 UN2213
Q007 UN2213
Q006 UN2213
Q005 UN2213
Q004 UN2213
Q003 UN2213
Q002 UN2213
Q001 UN2213
INSERT
SLV-900HF
Q001-009 LED DRIVE
CN002
FWD/RVS
RING 2
RING 1
COMMON 1
RING 0
PLAY
COMMON 2
STOP
REVERSE
FORWARD
REW
FF
PLAY
STOP
S901 DUAL MODE SHUTTLE
MF-171 BOARD
IC201 REMOTE CONTROL RECEIVER
R201 47k
R207 2.2k
D201 SLR-34MC3 POWER
D202 SLR-34MC3
Q201 UN2213 LED DRIVE
R205 68
0.1
5.1
5
VCC
OUT
GND
IC201 GP1U58X
S201 POWER ON/OFF
S202 EJECT
CN201
SIRCS 10
POWER/EJECT 9
POWER LED 8
UNSW 5V 7
D GND 6
L2 VIDEO IN 5
AN GND 4
L2 A (R) IN 3
A GND 2
L2 A (L) IN 1
L202 JW
L201 JW
R203 0
R204 0
R202 75
JW209
D205 RD6.2ESB
PJ201
VIDEO
L
AUDIO
R
LINE IN 2
(SHASSIS)

MF-172 BOARD

❶ IC101 ① 2 V/DIV 10 μs/DIV
REC/PB



❷ IC101 ⑥ 2 V/DIV 50 ns/DIV
REC/PB



No mark : COMMON (REC)
* : PB
# : Impossible to measure the voltage at the marked points.

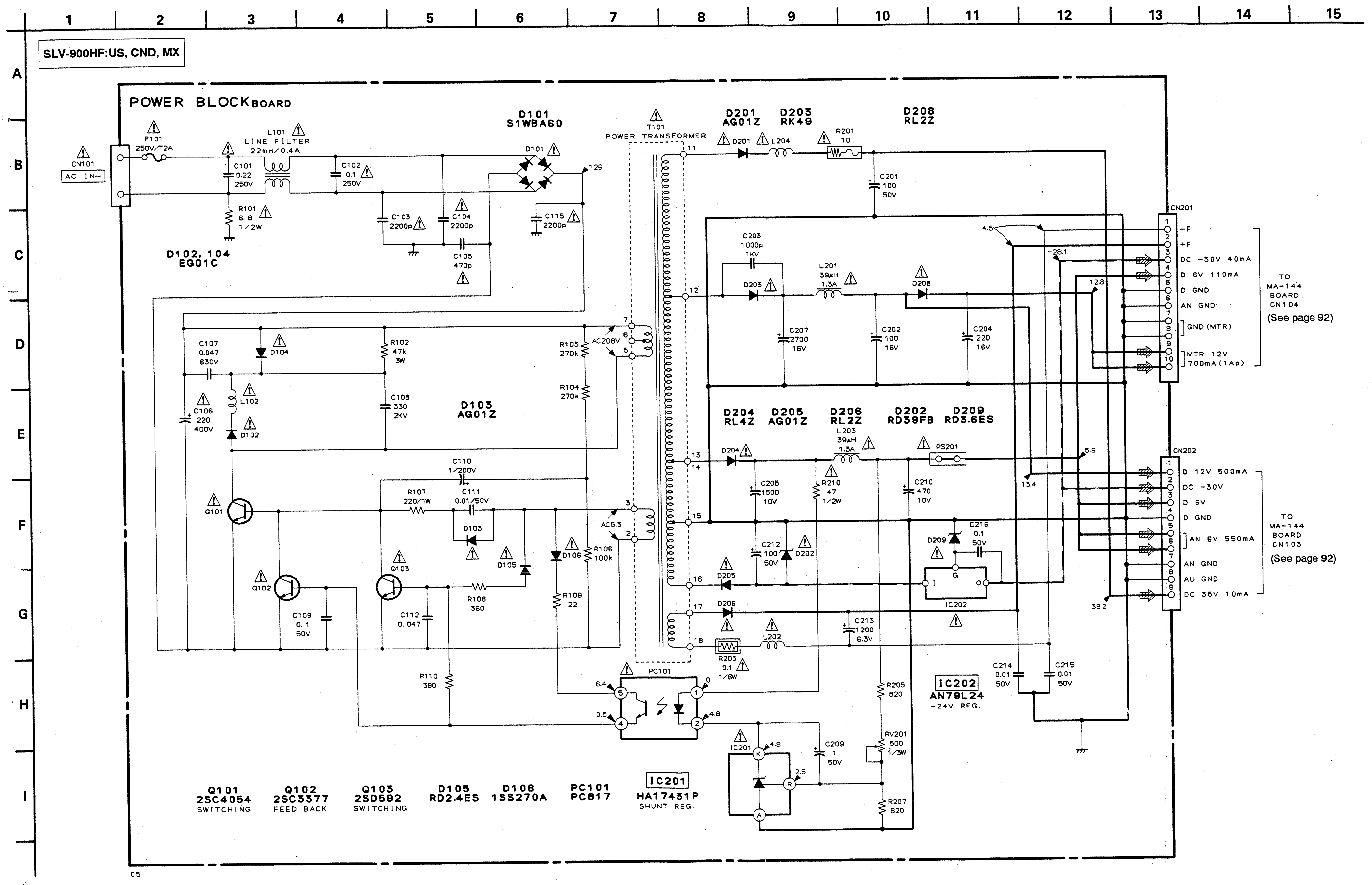
- Signal path

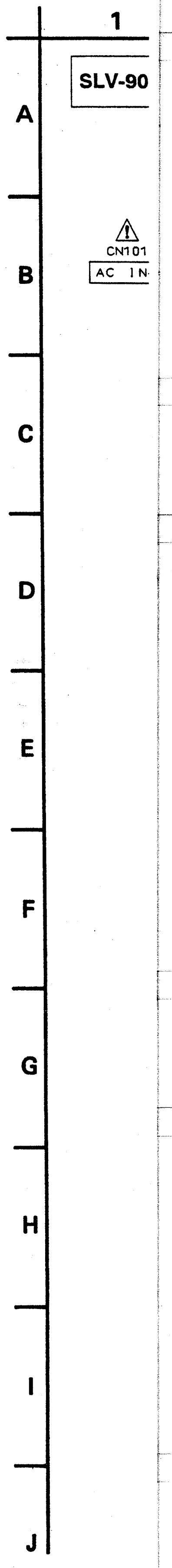
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➢	➡➢➢	➡
PB	⇨	⇨➢	⇨➢➢	⇨

MODE CONTROL

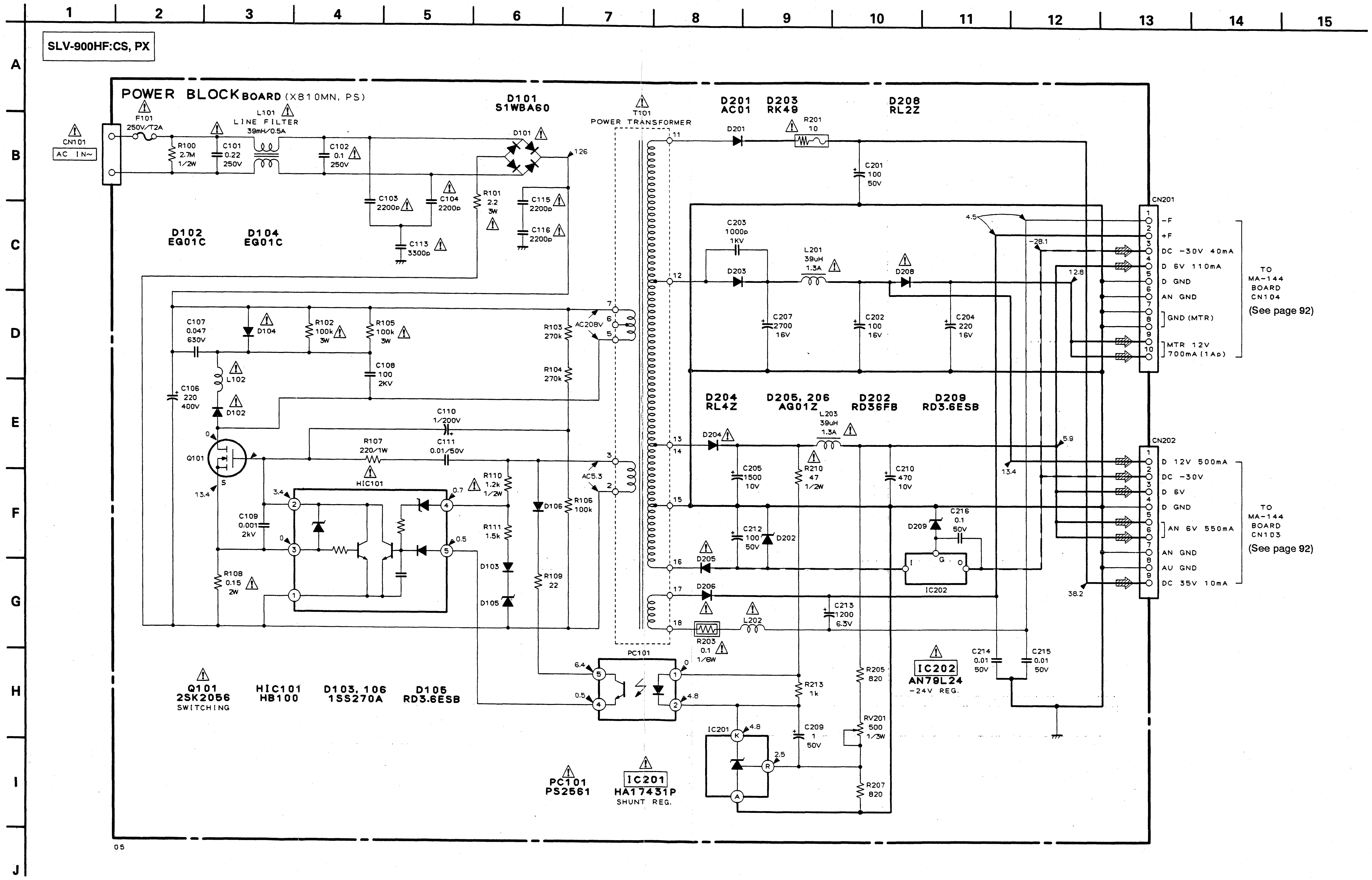
WER BLOCK SCHEMATIC DIAGRAM

– Ref. No.: POWER BLOCK Board; 7,000 series –


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
SLV-900HF:US, CND, MX
POWER BLOCK BOARD
CN101
AC IN~
F101
250V/T2A
L101
LINE FILTER
22mH/0.4A
C101
0.22
250V
C102
0.1
250V
R101
6.8
1/2W
C103
2200p
C104
2200p
C105
470p
D101
S1WBA60
126
C115
2200p
D102, 104
EG01C
T101
POWER TRANSFORMER
11
12
7
6
5
AC208V
3
AC5.3
2
13
14
15
16
17
18
C107
0.047
630V
D104
R102
47k
3W
R103
270k
R104
270k
C106
220
400V
L102
D102
C108
330
2KV
D103
AG01Z
C110
1/200V
R107
220/1W
C111
0.01/50V
D103
D105
D106
R106
100k
Q101
Q102
Q103
C109
0.1
50V
C112
0.047
R108
360
R109
22
R110
390
PC101
6.4
0.5
5
4
1
2
0
4.8
D201
AG01Z
D203
RK49
D208
RL2Z
D201
L204
R201
10
C201
100
50V
C203
1000p
1KV
D203
L201
39μH
1.3A
D208
C207
2700
16V
C202
100
16V
C204
220
16V
4.5
-28.1
12.8
CN201
-F
+F
DC -30V 40mA
D 6V 110mA
D GND
AN GND
GND (MTR)
MTR 12V
700mA (1Ap)
TO
MA-144
BOARD
CN104
(See page 92)
D204
RL4Z
D205
AG01Z
D206
RL2Z
D202
RD39FB
D209
RD3.6ES
D204
L203
39μH
1.3A
PS201
C205
1500
10V
R210
47
1/2W
C210
470
10V
5.9
13.4
CN202
D 12V 500mA
DC -30V
D 6V
D GND
AN 6V 550mA
AN GND
AU GND
DC 35V 10mA
TO
MA-144
BOARD
CN103
(See page 92)
C212
100
50V
D202
D205
D209
C216
0.1
50V
G
I
O
IC202
D206
C213
1200
6.3V
L202
R203
0.1
1/6W
38.2
C214
0.01
50V
C215
0.01
50V
R205
820
IC202
AN79L24
-24V REG.
IC201
4.8
K
2.5
R
A
C209
1
50V
RV201
500
1/3W
R207
820
Q101
2SC4054
SWITCHING
Q102
2SC3377
FEED BACK
Q103
2SD592
SWITCHING
D105
RD2.4ES
D106
1SS270A
PC101
PC817
IC201
HA17431P
SHUNT REG.
05


1
SLV-90
A
B
CN101
AC IN
C
D
E
F
G
H
I
J

POWER BLOCK

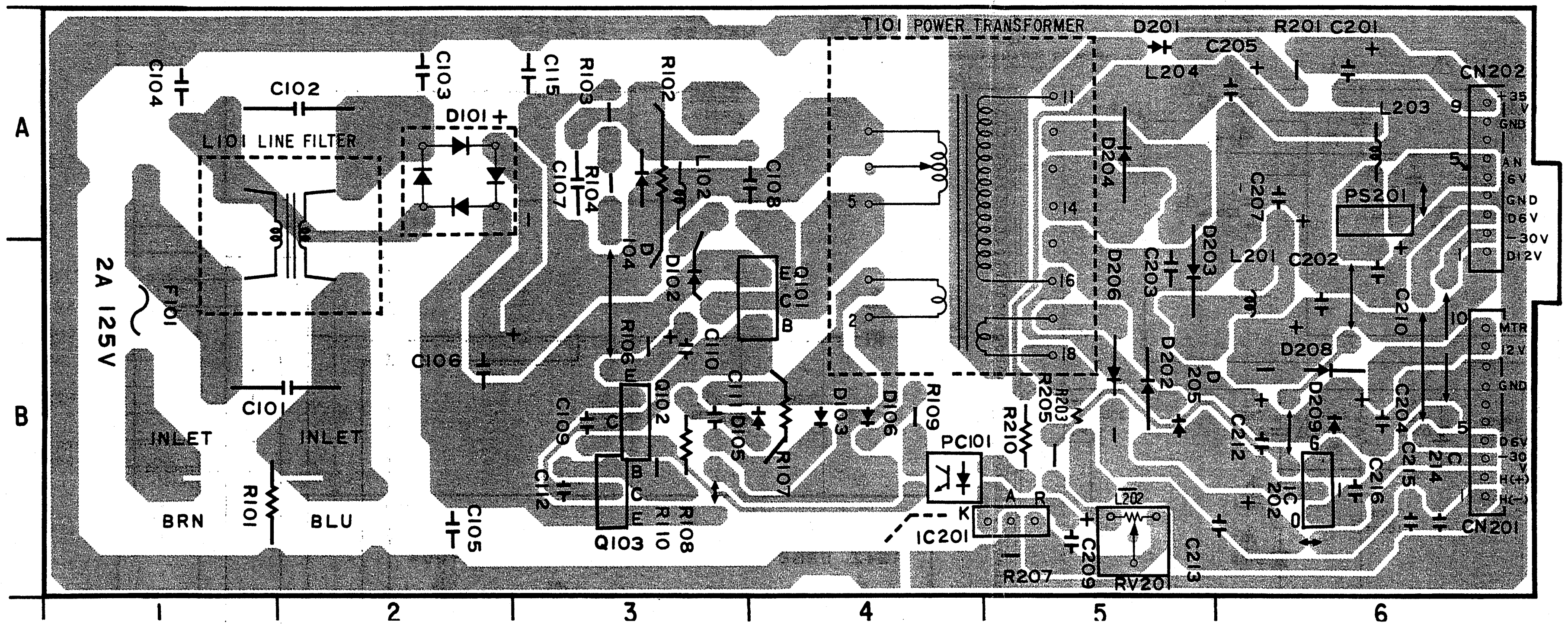

SLV-900HF:CS, PX
POWER BLOCK BOARD (X810MN, PS)
CN101
AC IN~
F101
250V/T2A
R100
2.7M
1/2W
C101
0.22
250V
L101
LINE FILTER
39mH/0.5A
C102
0.1
250V
C103
2200p
C104
2200p
C113
3300p
R101
2.2
3W
C115
2200p
C116
2200p
D101
S1WBA60
T101
POWER TRANSFORMER
D102
EG01C
D104
EG01C
C107
0.047
630V
R102
100k
3W
R105
100k
3W
C108
100
2KV
L102
C106
220
400V
R103
270k
R104
270k
AC208V
C110
1/200V
C111
0.01/50V
R107
220/1W
Q101
HIC101
R110
1.2k
1/2W
R111
1.5k
C109
0.001
2kV
R108
0.15
2W
D103
D105
D106
R106
100k
R109
22
AC5.3
PC101
Q101
2SK2056
SWITCHING
HIC101
HB100
D103, 106
1SS270A
D105
RD3.6ESB
PC101
PS2561
IC201
HA17431P
SHUNT REG.
D201
AC01
D203
RK49
D208
RL2Z
R201
10
C201
100
50V
C203
1000p
1KV
L201
39uH
1.3A
C207
2700
16V
C202
100
16V
C204
220
16V
D204
RL4Z
D205, 206
AG01Z
D202
RD36FB
D209
RD3.6ESB
L203
39uH
1.3A
C205
1500
10V
R210
47
1/2W
C210
470
10V
C216
0.1
50V
C212
100
50V
IC202
C213
1200
6.3V
R203
0.1
1/6W
L202
C214
0.01
50V
C215
0.01
50V
IC202
AN79L24
-24V REG.
R213
1k
C209
1
50V
R205
820
RV201
500
1/3W
R207
820
IC201
CN201
-F
+F
DC -30V 40mA
D 6V 110mA
D GND
AN GND
GND (MTR)
MTR 12V
700mA (1Ap)
TO
MA-144
BOARD
CN104
(See page 92)
CN202
D 12V 500mA
DC -30V
D 6V
D GND
AN 6V 550mA
AN GND
AU GND
DC 35V 10mA
TO
MA-144
BOARD
CN103
(See page 92)
05

POWER BLOCK PRINTED WIRING BOARD

– Ref. No.: POWER BLOCK Board; 7,000 series –

SLV-900HF:US, CND, MX

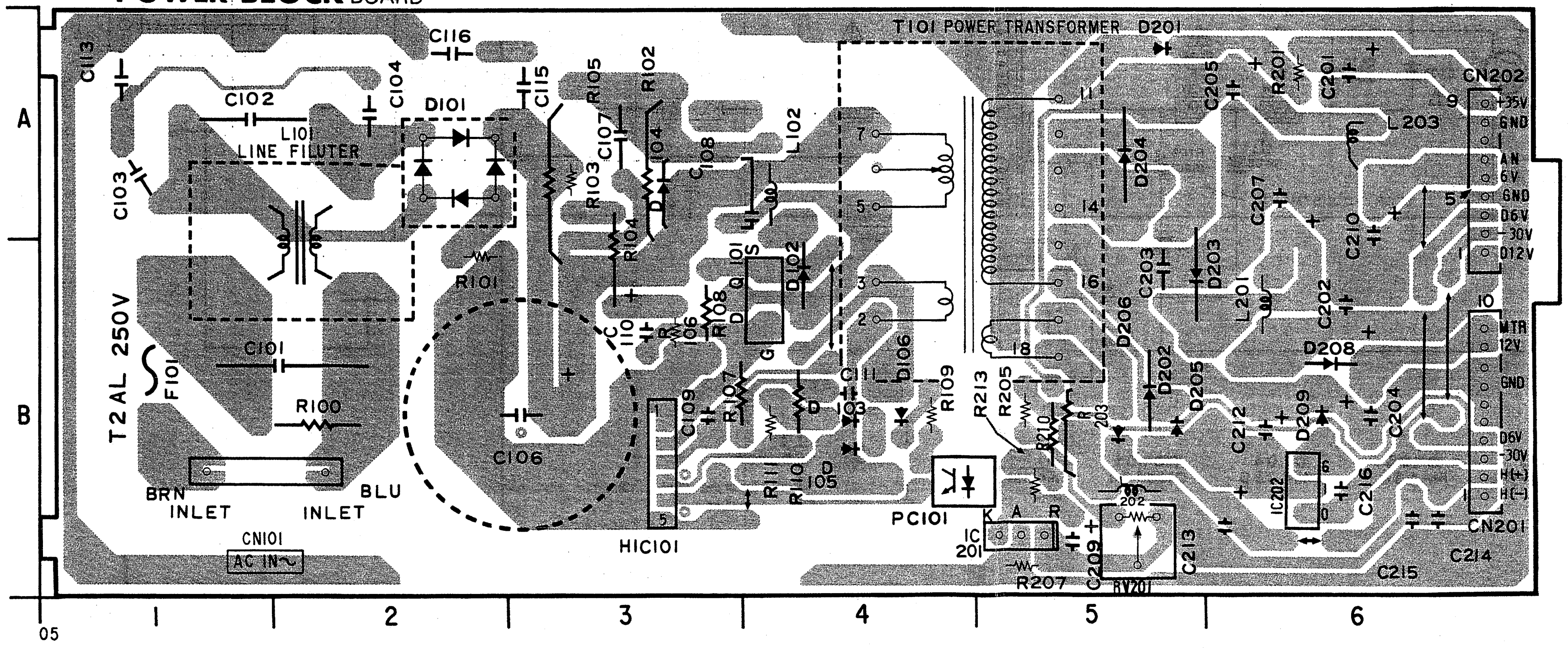
POWER BLOCK BOARD


T101 POWER TRANSFORMER
L101 LINE FILTER
2A 125V
F101
INLET
INLET
BRN
BLU
C101
C102
C103
C104
C105
C106
C107
C108
C109
C110
C111
C112
C115
D101
D102
D103
D104
D105
D106
R101
R102
R103
R104
R106
R107
R108
R109
R110
L102
Q101
Q102
Q103
PC101
IC201
R205
R207
R210
C209
C213
RV201
L202
D201
D202
D203
D204
D205
D206
D208
D209
C201
C202
C203
C204
C205
C207
C210
C212
C214
C215
C216
R201
L201
L203
L204
PS201
IC202
CN202
CN201
+35V
GND
AN
6V
GND
D6V
-30V
D12V
MTR
12V
GND
D6V
-30
H(+)
H(-)
A
B
1
2
3
4
5
6

POWER BLOCK BOARD	
D101	A-2
D102	B-3
D103	B-4
D104	A-3
D105	B-4
D106	B-4
D201	A-5
D202	B-5
D203	B-5
D204	A-5
D205	B-5
D206	B-5
D208	B-6
D209	B-6
IC201	B-5
IC202	B-6
Q101	B-4
Q102	B-3
Q103	B-3

SLV-900HF:Chile, PX

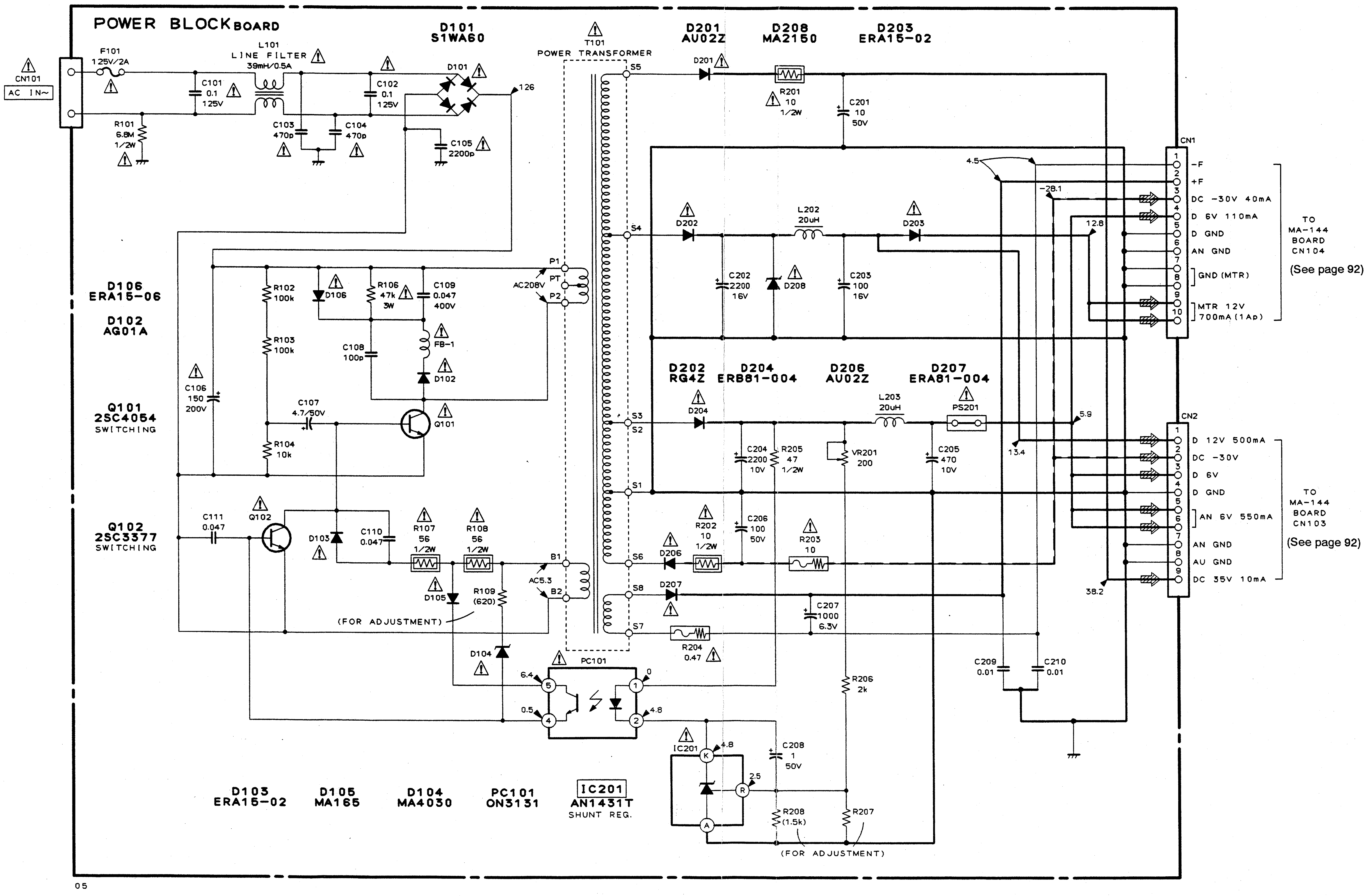
POWER BLOCK BOARD


T101 POWER TRANSFORMER
L101
LINE FILUTER
T2AL 250V
F101
BRN
INLET
BLU
INLET
CN101
AC IN~
C101
C102
C103
C104
C106
C107
C108
C109
C110
C111
C113
C115
C116
D101
D102
D103
D104
D105
D106
R100
R101
R102
R103
R104
R105
R106
R107
R108
R109
R110
R111
R213
L102
Q101
HIC101
PC101
IC201
R205
R207
R210
R203
C209
C213
RV201
L202
D201
D202
D203
D204
D205
D206
D208
D209
C201
C202
C203
C204
C205
C207
C210
C212
C214
C215
C216
R201
L201
L203
IC202
CN202
CN201
+35V
GND
AN
6V
GND
D6V
-30V
D12V
MTR
12V
GND
D6V
-30V
H(+)
H(-)
A
B
1
2
3
4
5
6
05

POWER BLOCK BOARD	
D101	A-2
D102	B-3
D103	B-4
D104	A-3
D105	B-4
D106	B-4
D201	A-5
D202	B-5
D203	B-5
D204	A-5
D205	B-5
D206	B-5
D208	B-6
D209	B-6
IC201	B-5
IC202	B-6
Q101	B-4

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

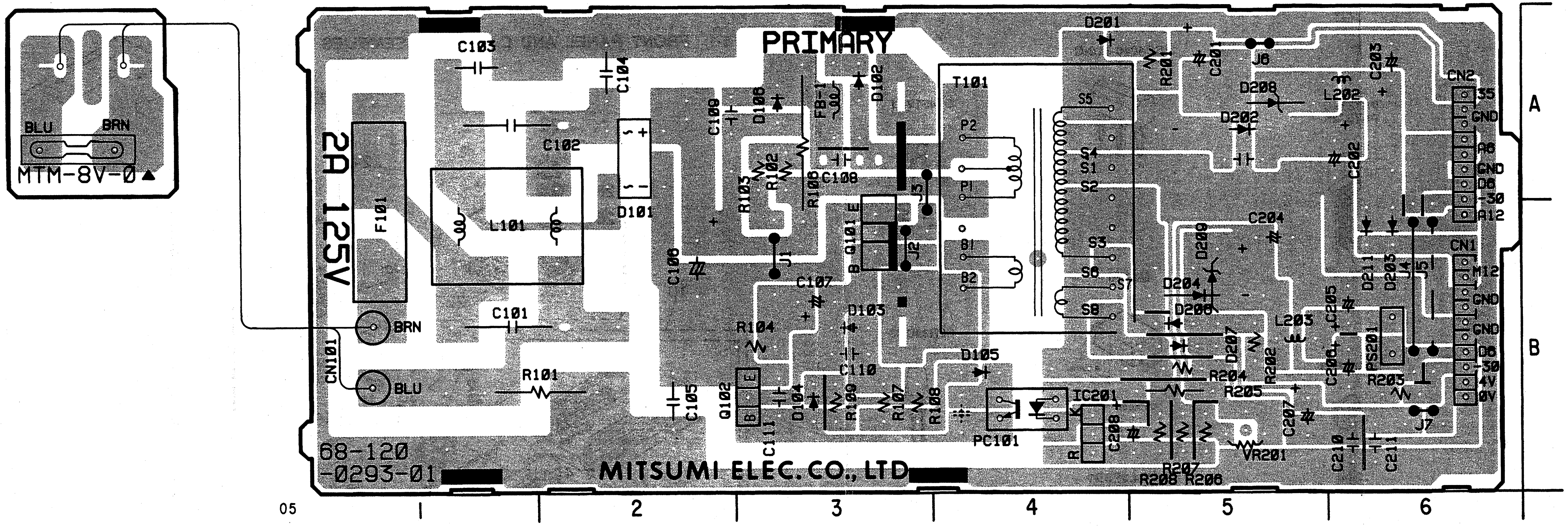
SLV-750HF/751HF


POWER BLOCK BOARD
CN101
AC IN~
F101
125V/2A
R101
6.8M
1/2W
C101
0.1
125V
L101
LINE FILTER
39mH/0.5A
C103
470p
C104
470p
C102
0.1
125V
D101
S1WA60
D101
126
C105
2200p
T101
POWER TRANSFORMER
S5
S4
S3
S2
S1
S6
S8
S7
P1
PT
P2
AC208V
B1
B2
AC5.3
D106
ERA15-06
D102
AG01A
Q101
2SC4054
SWITCHING
Q102
2SC3377
SWITCHING
R102
100k
R103
100k
R104
10k
D106
R106
47k
3W
C109
0.047
400V
C108
100p
FB-1
D102
C106
150
200V
C107
4.7/50V
Q101
C111
0.047
Q102
D103
C110
0.047
R107
56
1/2W
R108
56
1/2W
D105
R109
(620)
(FOR ADJUSTMENT)
D104
PC101
6.4
0.5
0
4.8
D103
ERA15-02
D105
MA165
D104
MA4030
PC101
ON3131
IC201
AN1431T
SHUNT REG.
D201
AU02Z
D208
MA2150
D203
ERA15-02
D201
R201
10
1/2W
C201
10
50V
D202
L202
20uH
D203
C202
2200
16V
D208
C203
100
16V
D202
RG4Z
D204
ERB81-004
D206
AU02Z
D207
ERA81-004
D204
L203
20uH
PS201
C204
2200
10V
R205
47
1/2W
VR201
200
C205
470
10V
R202
10
1/2W
C206
100
50V
D206
R203
10
D207
C207
1000
6.3V
R204
0.47
R206
2k
IC201
4.8
K
2.5
R
A
C208
1
50V
R208
(1.5k)
R207
(FOR ADJUSTMENT)
C209
0.01
C210
0.01
4.5
-28.1
12.8
5.9
13.4
38.2
CN1
1 -F
2 +F
3 DC -30V 40mA
4 D 6V 110mA
5 D GND
6 AN GND
7
8 GND (MTR)
9
10 MTR 12V 700mA (1Ap)
TO MA-144 BOARD CN104
(See page 92)
CN2
1 D 12V 500mA
2 DC -30V
3 D 6V
4 D GND
5
6 AN 6V 550mA
7 AN GND
8 AU GND
9 DC 35V 10mA
TO MA-144 BOARD CN103
(See page 92)
05

WER BLOCK

SLV-750HF/751HF

POWER BLOCK BOARD


BLU
BRN
MTM-8V-0
PRIMARY
2A 125V
F101
L101
C101
C102
C103
C104
C105
C106
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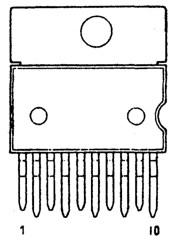
C108
C109
C110
C111
D101
D102
D103
D104
D105
D106
R101
R102
R103
R104
R105
R106
R107
R108
R109
FB-1
Q101
Q102
J1
J2
J3
CN101
BRN
BLU
T101
P1
P2
B1
B2
S1
S2
S3
S4
S5
S6
S7
S8
PC101
IC201
D201
D202
D203
D204
D206
D207
D208
D209
D211
R201
R202
R204
R205
R206
R207
R208
R203
VR201
C201
C202
C203
C204
C205
C206
C207
C208
C210
C211
L202
L203
PS201
J4
J5
J6
J7
CN1
CN2
S5
GND
A6
D6
-30
A12
M12
4V
0V
68-120
-0293-01
MITSUMI ELEC. CO., LTD
05
1
2
3
4
5
6
A
B

POWER BLOCK BOARD

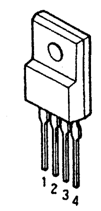
D101	A-2
D102	A-3
D103	B-3
D104	B-3
D105	B-4
D106	A-3
D201	A-4
D202	A-5
D203	B-6
D204	B-5
D206	B-5
D207	B-5
D208	A-5
D209	B-5
D211	B-6
IC201	B-4
Q101	B-3
Q102	B-3

-3. SEMICONDUCTORS

BA6238A



PQ09RF11
PQ12RF11



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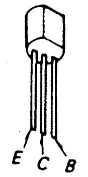
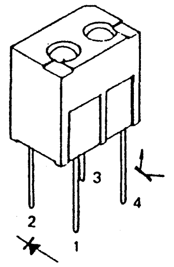


PS6002



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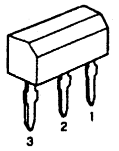
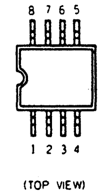
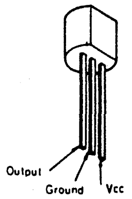


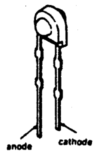
BA7755AF
TL082CPS


8 7 6 5
1 2 3 4
(TOP VIEW)

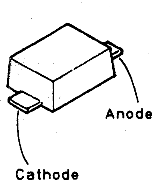
PST572C
PST572K


Output
Ground
Vcc

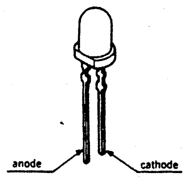
GL451VS1


anode
cathode

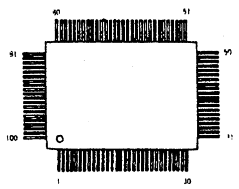
MA110


Anode
Cathode

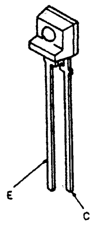
SLR34DC3


anode
cathode

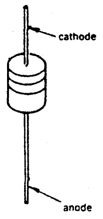
CXP80724-060Q
MB89095-110
XLH7772KS-VP



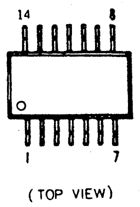
PT483F1S



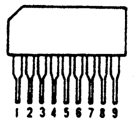
RD4.3ESB1
RD4.7ESB2
RD6.2ESB2
RD6.8ESB1
RD8.2ESB2
RD33ESB2
1SS119
11ES2


cathode
anode

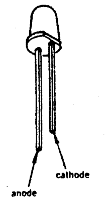
LA7218M


14
8
1
7
(TOP VIEW)

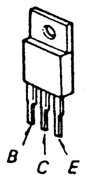
LVA522SA



SLR34MC3
SLR34VC3


anode
cathode

2SA-473-K



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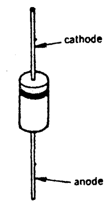
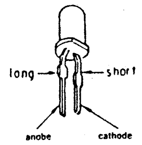
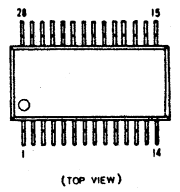

cathode
anode

TLY123


long
short
anode
cathode

MB90084PF-128


28
15
1
14
(TOP VIEW)

SECTION 5
EXPLODED VIEWS

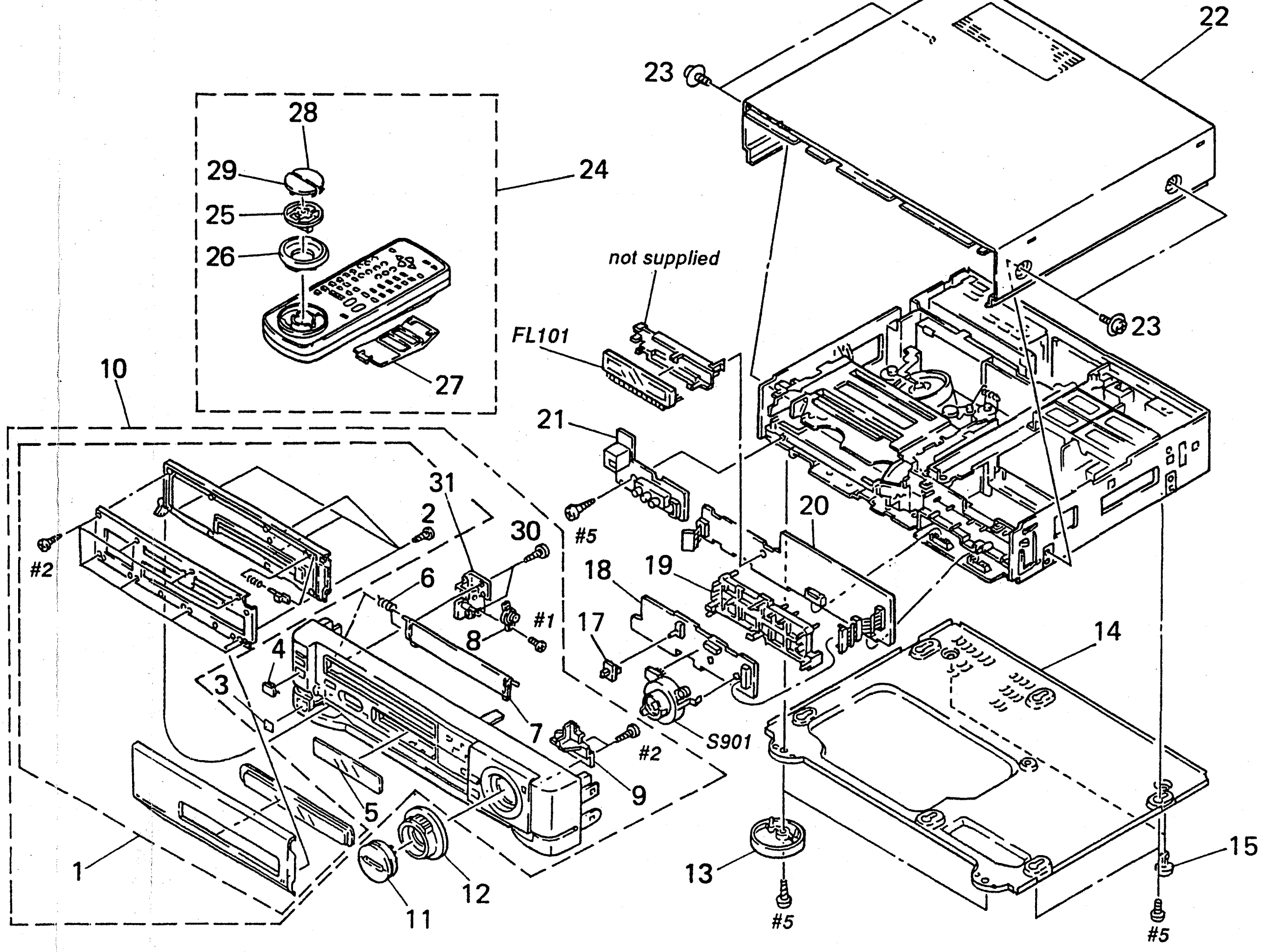
NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

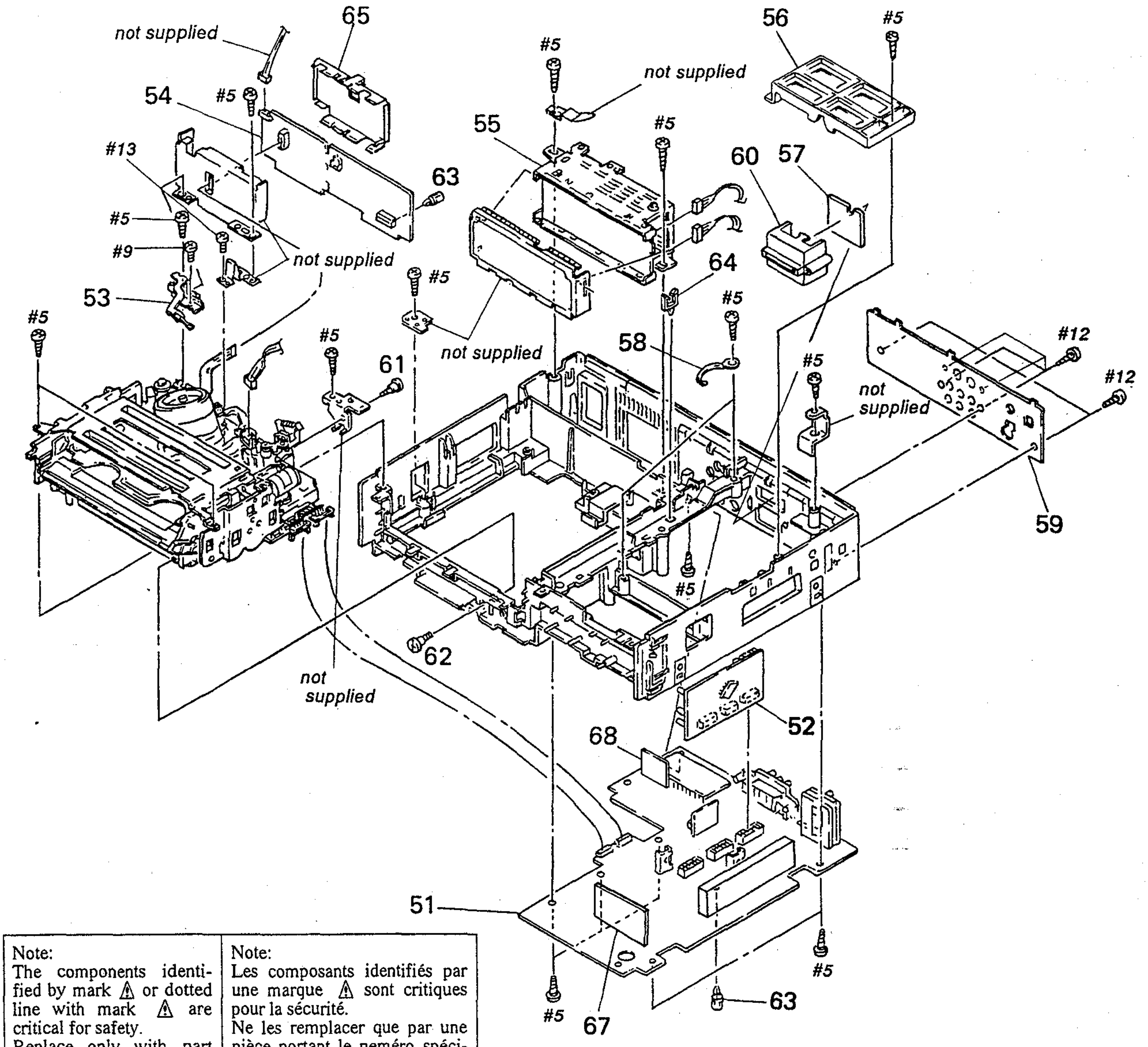
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le neméro spécifié.

5-1. FRONT PANEL AND CABINET ASSEMBLIES


22
23
28
29
25
26
24
27
not supplied
FL101
10
21
23
31
2
30
#5
#2
6
18
19
20
14
#1
17
4
8
3
7
S901
#2
9
5
1
11
12
13
#5
15
#5

Ref. No.	Part No.	Description	Remark
1	X-3942-323-1	DOOR BLOCK ASSY (H), HALF (750HF)	
1	X-3942-333-1	DOOR BLOCK ASSY (H), HALF (751HF)	
1	X-3942-334-1	DOOR BLOCK ASSY (H), HALF (900HF)	
2	4-908-792-31	SCREW (B2) (M2X4), TAPPING	
* 3	3-703-713-41	STICKER, SONY SYMBOL (10)	
4	3-946-620-01	FILTER, REMOTE CONTROL	
* 5	3-951-087-01	PLATE, TRANSPARENT, PANEL	
6	3-951-089-01	SPRING (GE), FL	
7	3-951-086-01	DOOR, CASSETTE (750HF/900HF)	
7	3-951-086-61	DOOR, CASSETTE (751HF)	
8	3-319-224-11	DAMPER, SMALL	
* 9	3-951-080-01	PLATE (RIGHT), FULCRUM, DOOR	
10.	X-3942-322-1	PANEL ASSY, FRONT (750HF)	
10	X-3942-327-1	PANEL ASSY, FRONT (900HF)	
10	X-3942-331-1	PANEL ASSY, FRONT (751HF)	
11	X-3942-217-1	BUTTON ASSY, FUNCTION (750HF/900HF)	
12	3-944-572-11	RING, SHUTTLE	
13	3-951-093-01	INSULATOR	
* 14	3-951-092-01	PLATE, BOTTOM	
15	3-670-155-11	LEG	
17	3-744-217-01	KNOB, SELECTION	
* 18	A-6756-901-A	MF-173 BOARD, COMPLETE (750HF/751HF)	
* 18	A-6756-914-A	MF-173 BOARD, COMPLETE (900HF)	
* 19	3-951-084-01	HOLDER, MF	
* 20	A-6756-900-A	MF-172 BOARD, COMPLETE (750HF:US/751HF:US)	
* 20	A-6756-909-A	MF-172 BOARD, COMPLETE (900HF:CND)	
* 20	A-6756-911-A	MF-172 BOARD, COMPLETE (750HF:CND/751HF:CND)	
* 20	A-6756-913-A	MF-172 BOARD, COMPLETE (900HF:US, MX, CHL, PX)	
* 21	A-6754-461-A	MF-171 BOARD, COMPLETE (750HF/751HF)	
* 21	A-6754-479-A	MF-171 BOARD, COMPLETE (900HF)	
22	3-741-985-21	CASE, UPPER (750HF/900HF)	
* 22	3-749-656-11	CASE, UPPER (751HF)	
23	3-710-901-11	SCREW, TAPPING	
24	1-466-916-11	REMOTE COMMANDER (RMT-V129) (900HF)	
24	1-466-968-31	REMOTE COMMANDER (RMT-V130) (750HF/751HF)	
25	3-941-619-11	HOLDER, DIAL	
26	3-951-746-01	RING, SHUTTLE	
27	3-943-535-01	COVER, BATTERY	
28	3-941-617-61	BUTTON, PLAYBACK	
29	3-941-618-51	BUTTON, STOP	
30	4-921-277-11	SCREW (B2. 6X8), TAPPING, BIND	
* 31	X-3942-319-1	PLATE (LEFT) BLOCK ASSY, FULCRUM	
FL101	1-517-132-11	INDICATOR TUBE, FLUORESCENT	
S901	1-572-662-11	SWITCH ROTARY (DUAL MODE SHUTTLE)	

5-2. MAIN BOARD AND POWER BLOCK ASSEMBLIES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#5
#5
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#13
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#5
#9
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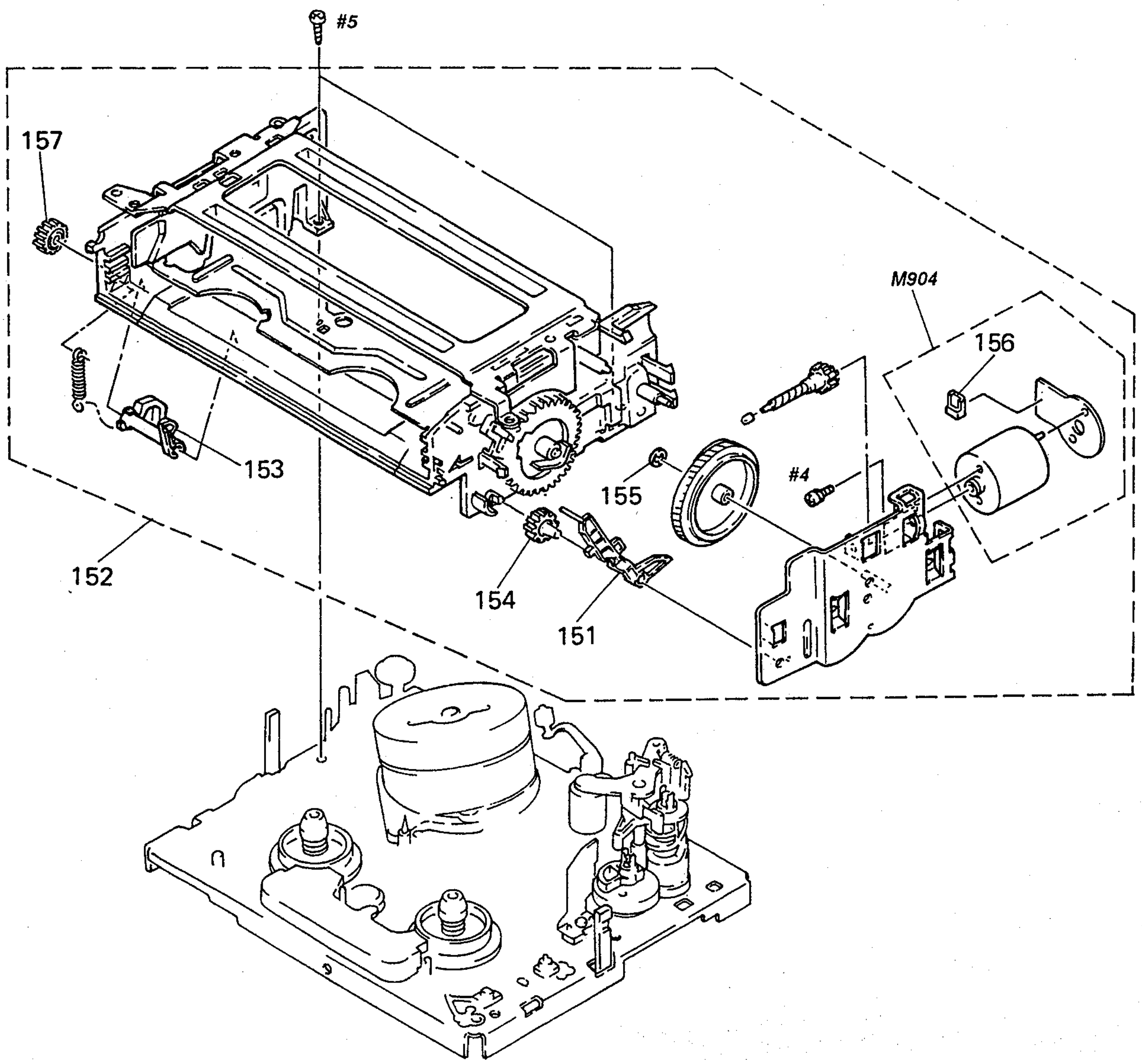
#5
64
53
#5
#5
#12
#5
58
#12
61
not supplied
#5
not
supplied
59
#5
62
not
supplied
68
52
51
#5
63
#5
67

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le neméro spécifié.

Ref. No.	Part No.	Description	Remark
* 51	A-6756-899-A	MA-144 BOARD, COMPLETE (750HF/751HF)	
* 51	A-6756-912-A	MA-144 BOARD, COMPLETE (900HF)	
* 52	A-6713-498-A	HF-27 BOARD, COMPLETE	
53	X-3733-304-1	GROUND ASSY, SHAFT	
* 54	A-6727-473-A	RP-149 BOARD, COMPLETE (750HF/751HF)	
* 54	A-6727-474-A	PR-149 BOARD, COMPLETE (900HF)	
⚠55	1-413-788-11	POWER BLOCK (750HF/751HF)	
⚠55	1-413-792-11	POWER BLOCK (900HF:US, CND, MX)	
⚠55	1-413-793-11	POWER BLOCK (900HF:CHL, PX)	
* 56	3-951-118-01	HOLDER, FRAME	
57	A-6754-478-A	CJ-1 BOARD, COMPLETE	
58	3-703-840-01	SCREW, TAPPING	

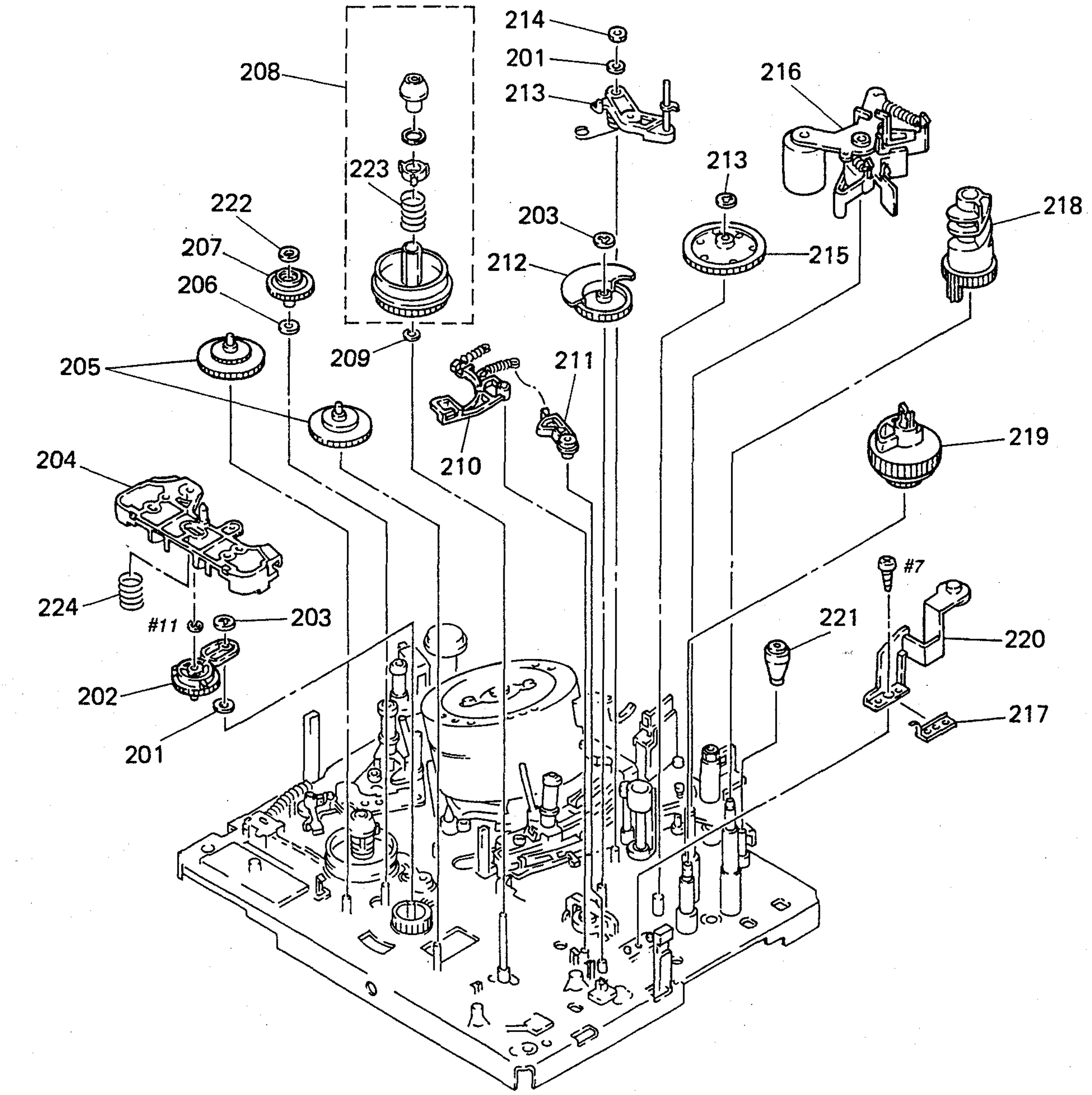
Ref. No.	Part No.	Description	Remark
* 59	3-951-081-51	PLATE, ORNAMENTAL, JACK(750HF)	
* 59	3-951-081-81	PLATE, ORNAMENTAL, JACK(900HF:US, CND, MX)	
59	3-951-081-91	PLATE, ORNAMENTAL, JACK(751HF)	
59	3-951-528-31	PLATE, ORNAMENTAL, JACK (900HF:CHL, PX)	
* 60	3-951-119-01	HOLDER, JACK	
61	3-736-055-01	SCREW (3X8), TAPPING	
62	3-741-948-01	SCREW (3), SPECIAL (+) TAPPING	
63	3-682-057-11	SPACER (SMALL)	
64	4-309-753-00	HOLDER, WIRE (750HF:CND/751HF/900HF)	
* 65	3-951-091-01	CASE (LID), SHIELD, RP	
* 67	A-6754-477-A	CB-43 BOARD, COMPLETE	
* 68	A-6754-499-A	ST-52 BOARD, COMPLETE	

5-3. FL CASSETTE COMPARTMENT ASSEMBLY



Ref. No.	Part No.	Description	Remark
151	3-741-935-06	LEVER, FLAT DOOR	
152	A-6751-421-A	FL BLOCK ASSY (M2)	
153	3-736-163-01	LEVER, ERASING PROTECTION	
154	X-3727-775-2	GEAR (RIGHT) ASSY, MIDWAY	
155	3-696-510-01	WASHER (3), STOPPER	
156	1-506-482-11	PIN, CONNECTOR 3P	
157	3-736-044-02	GEAR (LEFT), MIDWAY	
M904	X-3727-784-1	MOTOR ASSY (LOADING)	

5-4. MECHANISM CHASSIS ASSEMBLY (1)


214
201
213
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216
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222
207
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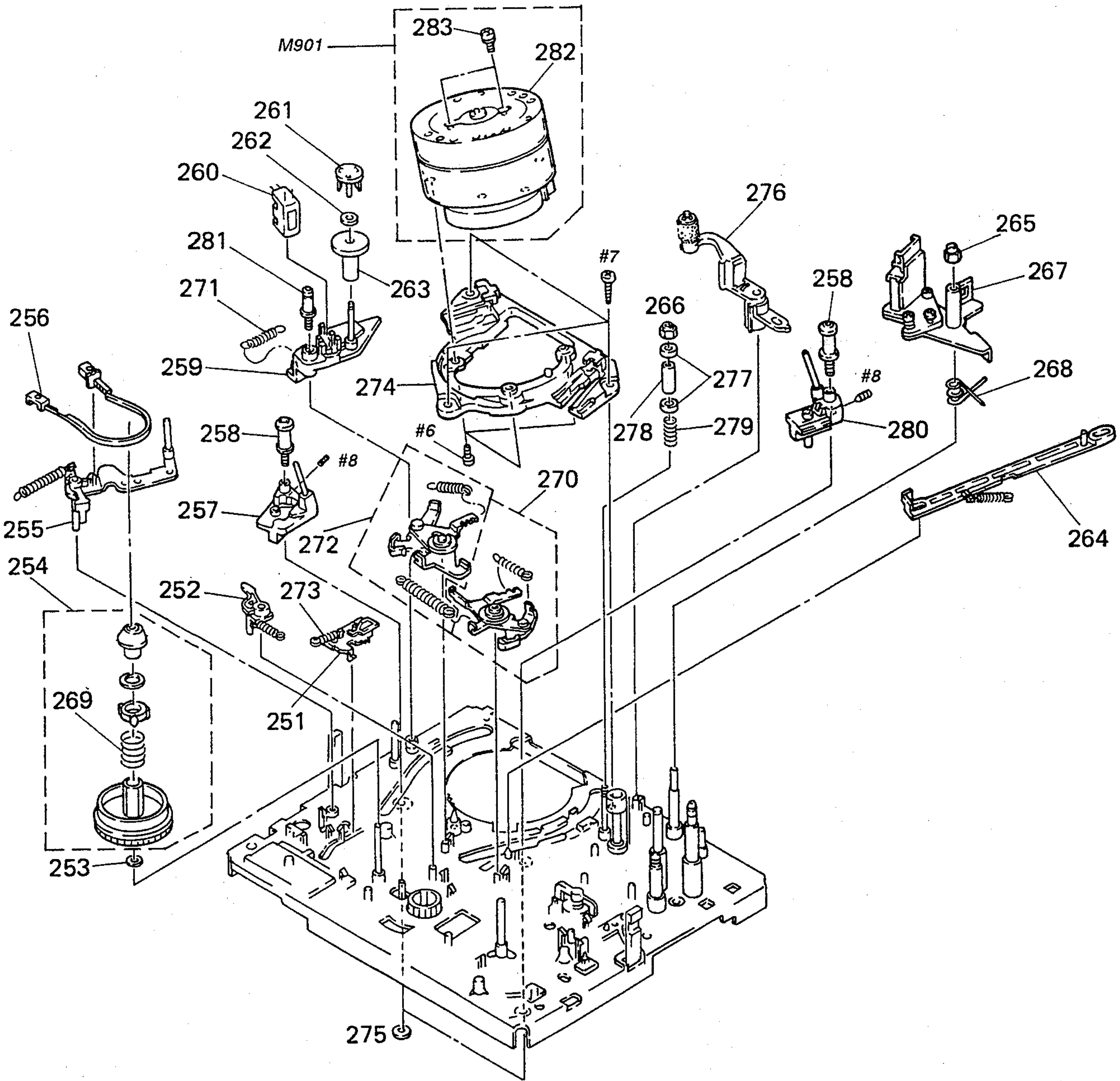
203
212
215
218
205
209
211
210
219
204
#7
221
220
224
#11
203
202
217
201

Ref. No.	Part No.	Description	Remark
201	3-701-438-11	WASHER, 2.5	
202	X-3727-776-1	ARM ASSY, PENDULUM	
203	3-669-595-00	WASHER (2), STOPPER	
204	3-736-172-02	RELEASE, LOCK, REEL	
205	X-3727-795-1	GEAR ASSY, RELAY	
206	3-736-074-01	RETAINER (SMALL), THRUST	
207	3-736-037-01	GEAR, REW	
208	X-3727-798-1	TABLE ASSY, REEL	
209	3-738-212-21	RETAINER, THRUST, REEL TABLE	
210	X-3727-764-1	BRAKE ASSY (S), T SOFT	
211	3-736-105-01	ARM, REV BRAKE	
212	3-736-143-01	GEAR, RVS CAM	
213	X-3942-218-1	ARM ASSY, RVS	
214	3-736-740-01	NUT (M2X0.25), NYLON	
215	3-736-116-01	GEAR, COMMUNICATION	
216	X-3727-770-1	PINCH ROLLER BLOCK ASSY	
217	3-744-227-01	SPRING, FL GROUND	
218	3-736-182-01	CAM, ELEVATOR	
219	3-943-700-01	GEAR, PRESS CAM	
220	3-946-652-01	OPENER, LID	
221	3-738-250-01	SCREW, AC ADJUSTMENT	
222	3-736-069-01	RETAINER, SPRING	
223	3-739-621-01	SPRING, COMPRESSION	
224	3-736-020-11	SPRING, COMPRESSION	

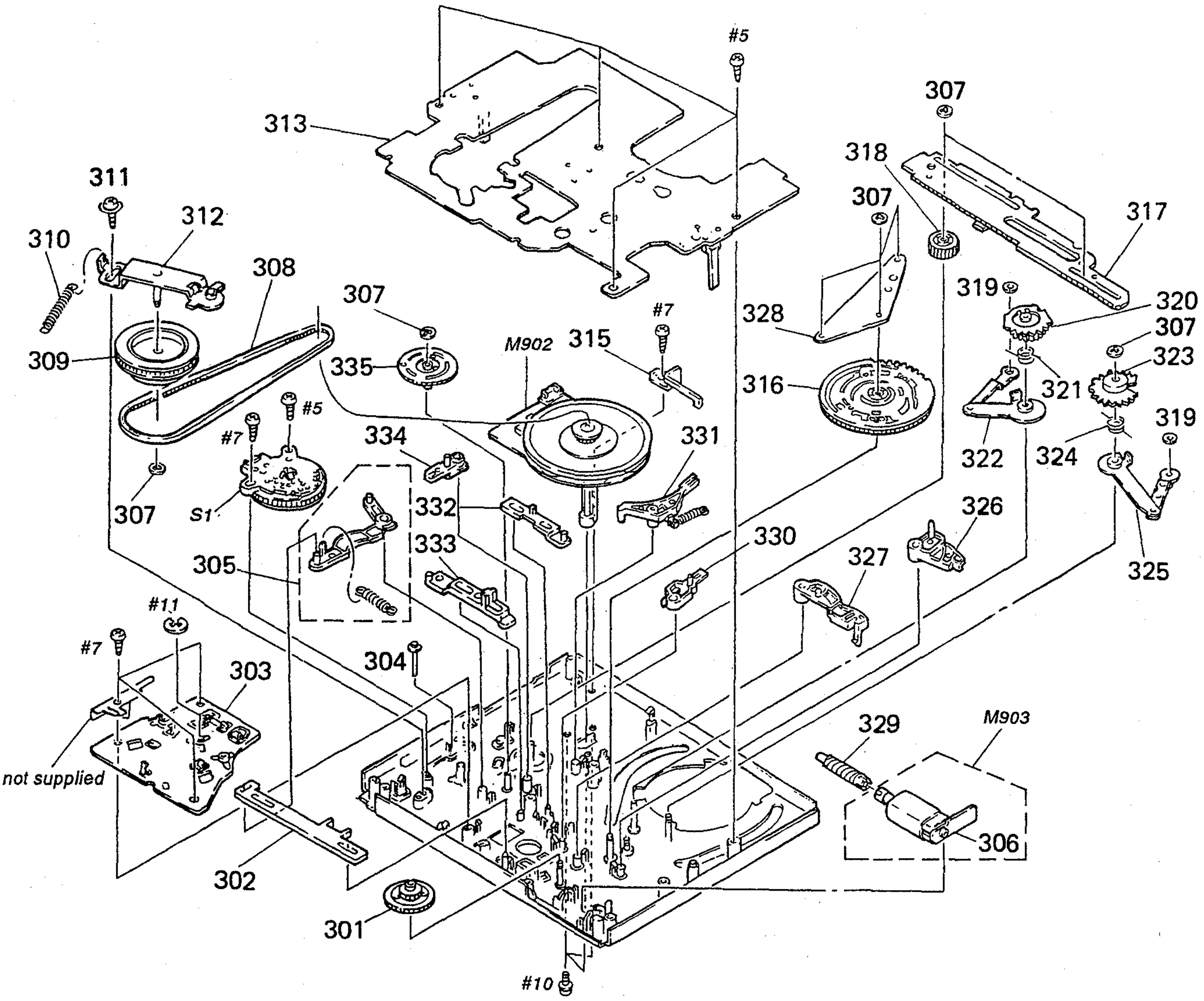
5-5. MECHANISM CHASSIS ASSEMBLY (2)



Ref. No.	Part No.	Description	Remark
251	A-6759-483-A	TAKE-UP BLOCK ASSY, S	
252	X-3727-773-1	ARM ASSY (S), S SOFT BRAKE	
253	3-738-212-21	RETAINER, THRUST, REEL TABLE	
254	X-3941-194-1	TABLE ASSY, REEL, S	
255	X-3727-772-1	ARM ASSY, TENSION REGULATOR	
256	X-3727-797-1	BAND ASSY, TENSION REGULATOR	
257	X-3727-786-1	SHUTTLE (LEFT) ASSY	
258	X-3733-301-1	ROLLER ASSY, GUIDE	
259	X-3727-767-1	BASE ASSY, STABILIZER	
260	1-543-647-11	HEAD, FE	
261	3-736-082-01	RETAINER, TS THRUST	
262	3-741-925-01	RING, RETAINING	
263	X-3727-771-1	STABILIZER ASSY, TAPE	
264	X-3743-517-1	LEVER ASSY, RELEASE, C ROLLER	
265	3-942-767-01	NUT, AC HEIGHT ADJUSTMENT	
266	3-942-866-01	NUT (M3) (3X0.5), NYLON	
267	A-6761-129-A	HEAD BLOCK ASSY, ACE	
268	3-946-148-01	SPRING, TORSION	
269	3-739-621-01	SPRING, COMPRESSION	

Ref. No.	Part No.	Description	Remark
270	X-3743-526-1	BRAKE ASSY (S), T	
271	3-736-745-01	SPRING, TENSION	
272	X-3733-337-2	BRAKE ASSY (S), S	
273	3-738-284-01	SPRING, TENSION	
274	X-3727-791-2	DRUM (BASE) ASSY	
275	3-736-073-01	SLIDER, POLYETHYLENE	
276	A-6747-267-A	ARM BLOCK ASSY (S), C ROLLER	
277	3-944-033-01	FLANGE, 7 GUIDE	
278	3-736-730-01	SLEEVE, #7 GUIDE	
279	3-749-099-01	SPRING (#7 GUIDE), COMPRESSION	
280	X-3727-787-1	SHUTTLE (RIGHT) ASSY	
281	X-3727-788-1	ROLLER ASSY, GUIDE, #2	
282	8-848-581-01	DRUM ASSY, ROTARY UPPER(DZR-49-R)(900HF)	
282	8-848-583-01	DRUM ASSY, ROTARY UPPER(DZR-50-R) (750HF/751HF)	
283	2-643-205-01	SCREW (PSW)3X8	
M901	8-848-580-11	DRUM ASSY (DZH-49A-R)(900HF)	
M901	8-848-582-01	DRUM ASSY (DZH-50A-R)(750HF/751HF)	

5-6. MECHANISM CHASSIS ASSEMBLY (3)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M903
not supplied
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Ref. No.	Part No.	Description	Remark
301	3-736-015-01	WHEEL (CAM), WORM	
302	3-736-158-01	PLATE, SLIDE, PENDULUM	
303	A-6739-084-A	CHASSIS BLOCK ASSY, SUB	
304	3-736-091-01	PIN, SWITCH	
305	X-3729-924-1	ARM ASSY, PENDULUM FUNCTION	
* 306	1-633-460-11	CA-41 BOARD	
307	3-669-595-00	WASHER (2), STOPPER	
308	3-736-013-01	BELT, TIMING	
309	X-3727-782-1	PULLEY ASSY	
310	3-736-089-01	SPRING, TENSION	
311	3-749-796-11	SCREW, TAPPING +BVTP WASHER	
312	X-3727-761-1	ARM ASSY, ADJUSTMENT	
* 313	A-6754-462-A	MD-56 BOARD, COMPLETE	
315	3-736-744-01	RETAINER, ROTOR	
316	3-736-176-01	GEAR, CAM	
317	3-736-177-01	PLATE, SLIDE, MODE	
318	3-733-394-01	GEAR, RVS RELAY	
319	3-736-073-01	SLIDER, POLYETHYLENE	
320	3-736-148-01	GEAR (RIGHT), THREADING	
321	3-736-092-01	SPRING (RIGHT), TORSION	
322	X-3727-777-1	ARM (RIGHT) ASSY, LOADING	
323	3-736-147-01	GEAR (LEFT), THREADING	
324	3-736-040-01	SPRING (LEFT), TORSION	
325	X-3727-778-1	ARM (LEFT) ASSY, LOADING	
326	3-736-142-01	ARM, TENSION REGULATOR FUNCTION	
327	3-736-140-01	ARM, S TAKE-UP	
328	3-733-396-01	HOLDER, CAM GEAR	
329	3-733-395-01	GEAR (CAM), WORM	
330	3-733-397-01	ARM, BRAKE FUNCTION	
331	X-3727-769-1	BRAKE ASSY, CAP	
332	3-733-398-01	PLATE, SLIDE, BRAKE	
333	3-736-103-01	PLATE, SLIDE, LIMITER	
334	3-736-016-01	ARM, LIMITER FUNCTION	
335	3-736-170-01	GEAR, RKB CAM	
M902	8-835-489-11	MOTOR, DC U-26K	
M903	X-3733-302-1	MOTOR ASSY, CAM	
S1	1-692-062-11	SWITCH, ROTARY	

CB-43 **CJ-1**

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u:μ, for example:
  uA..: μA..   uPA..: μPA..
  uPB..: μPB..   uPC..: μPC..   uPD..: μPD..
- CAPACITORS
  uF: μF
- COILS
  uH: μH

When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
		CB-43 BOARD ***********	
		< CAPACITOR >	
C001	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C002	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C003	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C004	1-124-443-00	ELECT 100uF 20%	10V
C005	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C006	1-124-443-00	ELECT 100uF 20%	10V
		< CONNECTOR >	
* CN001	1-695-948-11	CONNECTOR, BOARD TO BOARD 10P	
		< DIODE >	
D003	8-719-911-19	DIODE 1SS119	
		< IC >	
IC001	8-752-840-28	IC CXP50216-005S	
		< JUMPER RESISTOR >	
JR001	1-216-295-00	METAL CHIP 0 5%	1/10W
JR002	1-216-295-00	METAL CHIP 0 5%	1/10W
		< COIL >	
L001	1-414-183-41	INDUCTOR 10uH	
L002	1-414-183-41	INDUCTOR 10uH	
		< TRANSISTOR >	
Q001	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q002	8-729-140-75	TRANSISTOR 2SD999-CLCK	
Q003	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q004	8-729-421-19	TRANSISTOR UN2213	

Ref. No.	Part No.	Description	Remark
		< RESISTOR >	
R001	1-216-049-00	METAL CHIP 1K 5%	1/10W
R002	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R003	1-216-049-00	METAL CHIP 1K 5%	1/10W
R004	1-216-089-00	METAL CHIP 47K 5%	1/10W
R005	1-216-051-00	METAL CHIP 1.2K 5%	1/10W
R006	1-216-001-00	METAL CHIP 10 5%	1/10W
R007	1-216-049-00	METAL CHIP 1K 5%	1/10W
R008	1-216-049-00	METAL CHIP 1K 5%	1/10W
R009	1-216-049-00	METAL CHIP 1K 5%	1/10W
R010	1-216-049-00	METAL CHIP 1K 5%	1/10W
R011	1-216-049-00	METAL CHIP 1K 5%	1/10W
R012	1-216-049-00	METAL CHIP 1K 5%	1/10W
R013	1-216-049-00	METAL CHIP 1K 5%	1/10W
R014	1-216-049-00	METAL CHIP 1K 5%	1/10W
		< VIBRATOR >	
X001	1-577-101-11	VIBRATOR, CERAMIC	

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Ref. No.	Part No.	Description	Remark
	A-6754-478-A	CJ-1 BOARD, COMPLETE *******************	
		< CAPACITOR >	
C801	1-124-257-00	ELECT 2.2uF 20%	50V
C802	1-163-031-11	CERAMIC CHIP 0.01uF	50V
		< CONNECTOR >	
CN801	1-691-612-11	SOCKET, CONNECTOR 5P	
		< JACK >	
CNJ801	1-568-800-21	JACK, ULTRA SMALL (CABLE BOX CONTROL)	
CNJ802	1-563-935-11	JACK, STEREO HEADPHONE (CONTROL S IN)	

Ref. No.	Part No.	Description			Remark
		< DIODE >			
D803	8-719-109-96	DIODE RD6.8ES-B1			
D804	8-719-109-96	DIODE RD6.8ES-B1			
D805	8-719-109-96	DIODE RD6.8ES-B1			
		< TRANSISTOR >			
Q801	8-729-424-18	TRANSISTOR UN2113			
Q802	8-729-421-19	TRANSISTOR UN2213			
		< RESISTOR >			
R801	1-216-056-00	METAL GLAZE	2K	5%	1/10W

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Ref. No.	Part No.	Description			Remark
*	A-6713-498-A	HF-27 BOARD, COMPLETE *********************			
		< CAPACITOR >			
C201	1-123-382-00	ELECT	3.3uF	20%	100V
C202	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C203	1-124-916-11	ELECT	22uF	20%	63V
C204	1-163-007-11	CERAMIC CHIP	680PF	10%	50V
C205	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C206	1-137-367-11	FILM	0.0033uF	5%	50V
C207	1-137-370-11	FILM	0.01uF	5%	50V
C208	1-124-126-00	ELECT	47uF	20%	10V
C209	1-137-372-11	FILM	0.022uF	5%	50V
C210	1-124-927-11	ELECT	4.7uF	20%	100V
C211	1-124-907-11	ELECT	10uF	20%	50V
C212	1-124-916-11	ELECT	22uF	20%	63V
C213	1-124-126-00	ELECT	47uF	20%	10V
C214	1-124-903-11	ELECT	1uF	20%	50V
C215	1-124-907-11	ELECT	10uF	20%	50V
C216	1-137-370-11	FILM	0.01uF	5%	50V
C218	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C219	1-164-695-11	CERAMIC CHIP	0.0022uF	5%	50V
C220	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C221	1-164-345-11	CERAMIC CHIP	0.082uF	10%	25V
C223	1-123-382-00	ELECT	3.3uF	20%	100V
C224	1-123-382-00	ELECT	3.3uF	20%	100V
C225	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C227	1-137-364-11	FILM	0.001uF	5%	50V
C228	1-124-903-11	ELECT	1uF	20%	50V
C229	1-124-443-00	ELECT	100uF	20%	10V
C230	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C231	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C232	1-123-382-00	ELECT	3.3uF	20%	100V
C233	1-163-007-11	CERAMIC CHIP	680PF	10%	50V
C234	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C235	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C236	1-137-367-11	FILM	0.0033uF	5%	50V
C237	1-137-370-11	FILM	0.01uF	5%	50V
C238	1-124-126-00	ELECT	47uF	20%	10V
C239	1-137-372-11	FILM	0.022uF	5%	50V
C240	1-124-927-11	ELECT	4.7uF	20%	100V
C241	1-124-907-11	ELECT	10uF	20%	50V
C243	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C244	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C245	1-124-443-00	ELECT	100uF	20%	10V
C246	1-124-034-51	ELECT	33uF	20%	16V
C247	1-124-034-51	ELECT	33uF	20%	16V
C248	1-124-443-00	ELECT	100uF	20%	10V
C249	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C250	1-124-126-00	ELECT	47uF	20%	10V
C251	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C252	1-124-916-11	ELECT	22uF	20%	63V
C253	1-123-382-00	ELECT	3.3uF	20%	100V
		< CONNECTOR >			
CN201	1-695-938-11	CONNECTOR, BOARD TO BOARD 18P			
CN202	1-695-938-11	CONNECTOR, BOARD TO BOARD 18P			
CN203	1-695-938-11	CONNECTOR, BOARD TO BOARD 18P			
		< DIODE >			
D201	8-719-404-46	DIODE MA110			
D202	8-719-404-46	DIODE MA110			
D203	8-719-400-18	DIODE MA152WK			
D204	8-719-404-46	DIODE MA110			
		< IC >			
IC201	8-759-160-54	IC XLH7772KS-VP			
IC204	8-759-089-84	IC BA7755AF-T1			
		< COIL >			
L201	1-410-071-11	INDUCTOR 10mH			
		< TRANSISTOR >			
⚠Q201	8-729-808-01	TRANSISTOR 2SD1622-S			
⚠Q202	8-729-141-83	TRANSISTOR 2SA473			
Q208	8-729-421-19	TRANSISTOR UN2213			
		< RESISTOR >			
R201	1-216-677-11	METAL CHIP	12K	0.5%	1/10W
R202	1-216-085-00	METAL CHIP	33K	5%	1/10W
R203	1-216-105-00	METAL CHIP	220K	5%	1/10W
R204	1-216-129-00	METAL CHIP	2.2M	5%	1/10W
R205	1-216-049-00	METAL CHIP	1K	5%	1/10W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
R206	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R207	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R208	1-216-033-00	METAL CHIP	220	5%	1/10W
R209	1-216-109-00	METAL CHIP	330K	5%	1/10W
R210	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R211	1-216-037-00	METAL CHIP	330	5%	1/10W
R212	1-216-033-00	METAL CHIP	220	5%	1/10W
R213	1-216-083-00	METAL CHIP	27K	5%	1/10W
R215	1-216-045-00	METAL CHIP	680	5%	1/10W
R216	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R217	1-216-095-00	METAL CHIP	82K	5%	1/10W
R218	1-216-097-00	METAL CHIP	100K	5%	1/10W
R219	1-216-097-00	METAL CHIP	100K	5%	1/10W
R220	1-216-097-00	METAL CHIP	100K	5%	1/10W
R221	1-216-097-00	METAL CHIP	100K	5%	1/10W
R223	1-216-097-00	METAL CHIP	100K	5%	1/10W
R227	1-216-085-00	METAL CHIP	33K	5%	1/10W
R228	1-216-295-00	METAL CHIP	0	5%	1/10W
R229	1-216-073-00	METAL CHIP	10K	5%	1/10W
R230	1-216-073-00	METAL CHIP	10K	5%	1/10W
R231	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R232	1-216-085-00	METAL CHIP	33K	5%	1/10W
R234	1-216-077-00	METAL CHIP	15K	5%	1/10W
R235	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R236	1-216-109-00	METAL CHIP	330K	5%	1/10W
R237	1-216-081-00	METAL CHIP	22K	5%	1/10W
R238	1-216-073-00	METAL CHIP	10K	5%	1/10W
R239	1-216-680-11	METAL CHIP	16K	0.5%	1/10W
R240	1-216-085-00	METAL CHIP	33K	5%	1/10W
R241	1-216-105-00	METAL CHIP	220K	5%	1/10W
R243	1-216-081-00	METAL CHIP	22K	5%	1/10W
R244	1-216-085-00	METAL CHIP	33K	5%	1/10W
R245	1-216-081-00	METAL CHIP	22K	5%	1/10W
R246	1-216-085-00	METAL CHIP	33K	5%	1/10W
R247	1-216-081-00	METAL CHIP	22K	5%	1/10W
R248	1-216-085-00	METAL CHIP	33K	5%	1/10W
R249	1-216-081-00	METAL CHIP	22K	5%	1/10W
R250	1-216-085-00	METAL CHIP	33K	5%	1/10W
R251	1-216-081-00	METAL CHIP	22K	5%	1/10W
R252	1-216-081-00	METAL CHIP	22K	5%	1/10W
R253	1-216-081-00	METAL CHIP	22K	5%	1/10W
R254	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R255	1-216-085-00	METAL CHIP	33K	5%	1/10W
R261	1-216-129-00	METAL CHIP	2.2M	5%	1/10W
R267	1-216-085-00	METAL CHIP	33K	5%	1/10W
R268	1-216-109-00	METAL CHIP	330K	5%	1/10W
R269	1-216-295-00	METAL CHIP	0	5%	1/10W
R270	1-216-049-00	METAL CHIP	1K	5%	1/10W
R271	1-216-295-00	METAL CHIP	0	5%	1/10W

Ref. No.	Part No.	Description			Remark
R297	1-216-099-00	METAL CHIP	120K	5%	1/10W

< VARIABLE RESISTOR >

RV202	1-241-763-11	RES, ADJ, CERMET 4.7K
RV203	1-241-631-11	RES, ADJ, CARBON 22K
RV204	1-241-764-11	RES, ADJ, CERMET 10K
RV206	1-241-763-11	RES, ADJ, CERMET 4.7K
RV207	1-241-631-11	RES, ADJ, CARBON 22K

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* A-6756-899-A MA-144 BOARD, COMPLETE (750HF/751HF)

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* A-6756-912-A MA-144 BOARD, COMPLETE (900HF)

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		1-558-924-21	CABLE, PIN
*		3-951-893-01	HEAT SINK
		7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3

< CAPACITOR >

C101	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C102	1-124-126-00	ELECT	47uF	20%	10V
C103	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C104	1-124-916-11	ELECT	22uF	20%	63V
C105	1-124-443-00	ELECT	100uF	20%	10V
C106	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C107	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C108	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C109	1-124-925-11	ELECT	2.2uF	20%	100V
C110	1-124-477-11	ELECT	47uF	20%	25V
C111	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C112	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C113	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C114	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C115	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C116	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C117	1-124-925-11	ELECT	2.2uF	20%	100V
C118	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C119	1-124-916-11	ELECT	22uF	20%	63V
C131	1-124-477-11	ELECT	47uF	20%	25V
C132	1-124-584-00	ELECT	100uF	20%	10V
C135	1-124-477-11	ELECT	47uF	20%	25V
C136	1-126-101-11	ELECT	100uF	20%	16V
C201	1-162-306-11	CERAMIC	0.01uF	20%	16V
C203	1-126-101-11	ELECT	100uF	20%	16V
C204	1-130-489-00	MYLAR	0.033uF	5%	50V
C205	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C206	1-124-916-11	ELECT	22uF	20%	63V
C207	1-130-487-00	MYLAR	0.022uF	5%	50V
C207	1-137-372-11	FILM	0.022uF	5%	50V

Ref. No.	Part No.	Description		Remark	
C208	1-124-925-11	ELECT	2.2uF	20%	100V
C209	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C210	1-124-443-00	ELECT	100uF	20%	10V
C211	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C212	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C213	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C214	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C215	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C306	1-124-126-00	ELECT	47uF	20%	10V
C307	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C308	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C309	1-124-126-00	ELECT	47uF	20%	10V
C310	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C311	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C312	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C313	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C316	1-124-925-11	ELECT	2.2uF	20%	100V
C317	1-164-343-11	CERAMIC CHIP	0.056uF	10%	25V
C318	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C319	1-124-126-00	ELECT	47uF	20%	10V
C320	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C321	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C322	1-124-903-11	ELECT	1uF	20%	50V
C323	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
C324	1-124-126-00	ELECT	47uF	20%	10V
C325	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C326	1-124-126-00	ELECT	47uF	20%	10V
C327	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C340	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C601	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C603	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C604	1-124-589-11	ELECT	47uF	20%	16V
C605	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C606	1-162-306-11	CERAMIC	0.01uF	20%	16V
C607	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C609	1-162-306-11	CERAMIC	0.01uF	20%	16V
C610	1-124-589-11	ELECT	47uF	20%	16V
C613	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C614	1-124-589-11	ELECT	47uF	20%	16V
C617	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C618	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C619	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C620	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C621	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C623	1-124-126-00	ELECT	47uF	20%	10V
C629	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C651	1-124-907-11	ELECT	10uF	20%	50V
C652	1-124-907-11	ELECT	10uF	20%	50V
C653	1-124-907-11	ELECT	10uF	20%	50V

Ref. No.	Part No.	Description		Remark	
C654	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C702	1-124-126-00	ELECT	47uF	20%	10V
C703	1-124-472-11	ELECT	470uF	20%	10V
C704	1-124-126-00	ELECT	47uF	20%	10V
C714	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C716	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C804	1-124-916-11	ELECT	22uF	20%	63V
C808	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C809	1-126-101-11	ELECT	100uF	20%	16V
C810	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C811	1-124-927-11	ELECT	4.7uF	20%	100V
C812	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C813	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C814	1-124-126-00	ELECT	47uF	20%	10V
C817	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C819	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C820	1-124-126-00	ELECT	47uF	20%	10V
C824	1-124-907-11	ELECT	10uF	20%	50V
C825	1-124-907-11	ELECT	10uF	20%	50V
C826	1-124-907-11	ELECT	10uF	20%	50V
C828	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C829	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C830	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C836	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C837	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C852	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C853	1-164-232-11	CERAMIC CHIP (900HF)	0.01uF		50V
C854	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C855	1-163-011-11	CERAMIC CHIP (900HF)	0.0015uF	10%	50V
C856	1-104-696-11	FILM (750HF/751HF)	0.015uF	5%	100V
C856	1-137-612-11	FILM (900HF)	0.0068uF	5%	100V
C857	1-104-697-11	FILM (900HF)	0.047uF	5%	100V
C858	1-104-695-11	FILM	330PF	5%	100V
C859	1-124-477-11	ELECT	47uF	20%	25V
C860	1-124-477-11	ELECT (900HF)	47uF	20%	25V
C861	1-130-491-00	MYLAR	0.047uF	5%	50V
C861	1-137-374-11	FILM	0.047uF	5%	50V

< CONNECTOR >

CJ701	1-695-934-11	JACK, PIN 6P (LINE IN 1/LINE OUT)
CN101	1-506-468-11	PIN, CONNECTOR 3P
CN103	1-568-786-11	PIN, CONNECTOR 9P
CN104	1-568-787-11	PIN, CONNECTOR 10P

Ref. No.	Part No.	Description	Remark
CN201	1-569-338-11	CONNECTOR, BOARD TO BOARD 19P	
CN202	1-569-338-11	CONNECTOR, BOARD TO BOARD 19P	
CN401	1-691-702-11	CONNECTOR, BOARD TO BOARD 20P	
CN402	1-691-702-11	CONNECTOR, BOARD TO BOARD 20P	
CN403	1-695-519-21	SOCKET, CONNECTOR 5P	
CN601	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P	
* CN602	1-573-128-11	PIN, CONNECTOR 5P	
CN851	1-695-939-11	CONNECTOR, BOARD TO BOARD 18P	
CN852	1-695-939-11	CONNECTOR, BOARD TO BOARD 18P	
CN853	1-695-939-11	CONNECTOR, BOARD TO BOARD 18P	
* CN854	1-560-892-00	PIN, CONNECTOR 4P	
* CN855	1-560-891-00	PIN, CONNECTOR 3P	
* CN857	1-560-892-00	PIN, CONNECTOR 4P	
		< DIODE >	
⚠D101	8-719-200-76	DIODE 10E1N	
⚠D102	8-719-200-76	DIODE 10E1N	
D103	8-719-911-19	DIODE 1SS119	
D104	8-719-911-19	DIODE 1SS119	
D201	8-719-108-24	DIODE 1SS223	
D202	8-719-109-74	DIODE RD4.3ES-B1	
D203	8-719-109-81	DIODE RD4.7ES-B2	
D204	8-719-200-82	DIODE 11ES2	
D206	8-719-801-48	DIODE 1SS193	
D301	8-719-200-82	DIODE 11ES2	
D302	8-719-801-48	DIODE 1SS193	
D605	8-719-911-19	DIODE 1SS119	
D706	8-719-109-74	DIODE RD4.3ES-B1	
D801	8-719-110-78	DIODE RD33ES-B2	
D802	8-719-800-76	DIODE 1SS226	
		< DELAY LINE >	
DL602	1-415-668-11	DELAY LINE, ULTRASONIC	
DL602	1-415-668-31	DELAY LINE, ULTRASONIC	
		< IC >	
IC101	8-759-246-14	IC TA8823N	
⚠IC131	8-759-513-73	IC PQ09RF11	
⚠IC132	8-759-513-72	IC PQ12RF11	
⚠IC201	8-759-983-45	IC BA6238A	
IC202	8-759-908-17	IC TL082CPS	
IC203	8-752-838-34	IC CXP80724-060Q	
IC301	8-759-089-80	IC MB90084PF-128	
IC302	8-759-164-09	IC LA7218M	
IC601	1-809-956-11	IC H8B7219B	
IC605	8-759-511-44	IC LVA522SA	
		< JUMPER RESISTOR >	
JR101	1-216-296-00	METAL CHIP 0 5% 1/8W	

Ref. No.	Part No.	Description	Remark
JR102	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR103	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR104	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR105	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR106	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR107	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR108	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR109	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR110	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR111	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR112	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR113	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR114	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR115	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR116	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR117	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR119	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR120	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR121	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR122	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR123	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR124	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR125	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR126	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR127	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR128	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR129	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR130	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR131	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR132	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR133	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR134	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR135	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR136	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR137	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR138	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR139	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR140	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR141	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR142	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR143	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR144	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR145	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR146	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR147	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR148	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR149	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR150	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR151	1-216-295-00	METAL CHIP 0 5% 1/10W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
JR152	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR153	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR154	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR155	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR373	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR374	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR375	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR803	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR902	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR903	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR917	1-216-295-00	METAL CHIP 0 5% 1/10W	(750HF/751HF)
JR923	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR932	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR933	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR936	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR938	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR942	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR943	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR945	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR949	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR950	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR951	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR953	1-216-296-00	METAL CHIP 0 5% 1/8W	
		< COIL >	
L101	1-414-189-31	INDUCTOR 100uH	
L102	1-410-521-11	INDUCTOR 100uH	
L103	1-410-519-11	INDUCTOR 68uH	
L201	1-410-513-11	INDUCTOR 22uH	
L202	1-414-183-41	INDUCTOR 10uH	
L301	1-414-189-31	INDUCTOR 100uH	
L303	1-408-413-00	INDUCTOR 22uH	
L304	1-410-521-11	INDUCTOR 100uH	
L601	1-414-189-31	INDUCTOR 100uH	
L602	1-408-424-00	INDUCTOR 180uH	
L603	1-414-189-31	INDUCTOR 100uH	
L607	1-414-189-31	INDUCTOR 100uH	
L609	1-408-422-00	INDUCTOR 120uH	
L610	1-414-189-31	INDUCTOR 100uH	
L701	1-414-189-31	INDUCTOR 100uH	
L707	1-408-401-00	INDUCTOR 2.2uH	
L708	1-408-401-00	INDUCTOR 2.2uH	
L801	1-414-189-31	INDUCTOR 100uH	
L802	1-414-183-41	INDUCTOR 10uH	
L804	1-414-183-41	INDUCTOR 10uH	
L852	1-410-687-11	INDUCTOR 1.2mH	
L853	1-410-687-11	INDUCTOR 1.2mH	(900HF)

Ref. No.	Part No.	Description	Remark
		< IC LINK >	
PS801	1-532-679-00	LINK, IC	
PS851	1-532-679-00	LINK, IC	
		< TRANSISTOR >	
Q101	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q102	8-729-421-19	TRANSISTOR UN2213	
Q103	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q105	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q107	8-729-422-36	TRANSISTOR 2SB709A-Q	
Q201	8-729-424-56	TRANSISTOR UN211L	
Q303	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q304	8-729-422-36	TRANSISTOR 2SB709A-Q	
Q306	8-729-424-18	TRANSISTOR UN2113	
Q602	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q604	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q606	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q608	8-729-424-56	TRANSISTOR UN211L	
Q609	8-729-421-19	TRANSISTOR UN2213	
Q613	8-729-421-19	TRANSISTOR UN2213	
Q615	8-729-424-18	TRANSISTOR UN2113	
Q616	8-729-421-19	TRANSISTOR UN2213	
Q701	8-729-422-36	TRANSISTOR 2SB709A-Q	
Q801	8-729-173-38	TRANSISTOR 2SA733-K	
Q802	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q803	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q804	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q851	8-729-012-31	TRANSISTOR 2SC4040-TL2-Q	
Q852	8-729-012-31	TRANSISTOR 2SC4040-TL2-Q	(900HF)
Q853	8-729-421-19	TRANSISTOR UN2213	
Q854	8-729-424-08	TRANSISTOR UN2111	
Q855	8-729-424-18	TRANSISTOR UN2113	(900HF)
		< RESISTOR >	
R101	1-216-119-00	METAL CHIP 820K 5% 1/10W	
R102	1-216-093-00	METAL CHIP 68K 5% 1/10W	
R103	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R104	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R105	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R106	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R107	1-216-037-00	METAL CHIP 330 5% 1/10W	
R108	1-216-025-00	METAL CHIP 100 5% 1/10W	
R109	1-216-659-11	METAL CHIP 2.2K 0.5% 1/10W	
R110	1-216-651-11	METAL CHIP 1K 0.5% 1/10W	
R111	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R112	1-216-079-00	METAL CHIP 18K 5% 1/10W	
R113	1-216-041-00	METAL CHIP 470 5% 1/10W	
R114	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	

Ref. No.	Part No.	Description				Remark
R115	1-216-035-00	METAL CHIP	270	5%	1/10W	
R116	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R117	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R118	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R119	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R120	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R121	1-216-041-00	METAL CHIP	470	5%	1/10W	
R122	1-216-033-00	METAL CHIP	220	5%	1/10W	
R123	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R124	1-249-429-11	CARBON	10K	5%	1/4W	
R126	1-216-659-11	METAL CHIP	2.2K	0.5%	1/10W	
R131	1-249-417-11	CARBON	1K	5%	1/4W	F
R201	1-216-295-00	METAL CHIP	0	5%	1/10W	
R202	1-216-295-00	METAL CHIP	0	5%	1/10W	
R203	1-249-429-11	CARBON	10K	5%	1/4W	
R204	1-249-429-11	CARBON	10K	5%	1/4W	
R205	1-249-429-11	CARBON	10K	5%	1/4W	
R206	1-249-436-11	CARBON	39K	5%	1/4W	
R207	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R208	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R209	1-215-463-00	METAL	56K	1%	1/6W	
R210	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R211	1-216-660-11	METAL CHIP	2.4K	0.5%	1/10W	
R212	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R213	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R214	1-247-885-00	CARBON	180K	5%	1/4W	
R215	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R216	1-216-198-00	METAL CHIP	1K	5%	1/8W	
R217	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R218	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	
R219	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R220	1-249-431-11	CARBON	15K	5%	1/4W	
R222	1-249-422-11	CARBON	2.7K	5%	1/4W	F
R223	1-249-429-11	CARBON	10K	5%	1/4W	
R224	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R225	1-249-437-11	CARBON	47K	5%	1/4W	
R226	1-249-437-11	CARBON	47K	5%	1/4W	
R227	1-249-429-11	CARBON	10K	5%	1/4W	
R230	1-249-429-11	CARBON	10K	5%	1/4W	
R303	1-216-033-00	METAL CHIP	220	5%	1/10W	
R304	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R305	1-216-295-00	METAL CHIP	0	5%	1/10W	
R306	1-216-295-00	METAL CHIP	0	5%	1/10W	
R307	1-216-043-00	METAL CHIP	560	5%	1/10W	
R308	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R309	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R310	1-216-043-00	METAL CHIP	560	5%	1/10W	
R311	1-249-429-11	CARBON	10K	5%	1/4W	
R312	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R313	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R314	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R315	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R316	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R601	1-216-041-00	METAL CHIP	470	5%	1/10W	
R602	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R603	1-249-417-11	CARBON	1K	5%	1/4W	F
R604	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R605	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R606	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R607	1-216-050-00	METAL GLAZE	1.1K	5%	1/10W	
R608	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R609	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R614	1-216-035-00	METAL CHIP	270	5%	1/10W	
R615	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R616	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R617	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	
R618	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R620	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R621	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R627	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R628	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R629	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R636	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R701	1-249-408-11	CARBON	180	5%	1/4W	F
R702	1-249-407-11	CARBON	150	5%	1/4W	F
R703	1-216-021-00	METAL CHIP	68	5%	1/10W	
R704	1-216-022-00	METAL CHIP	75	5%	1/10W	
R708	1-216-295-00	METAL CHIP	0	5%	1/10W	
R709	1-216-295-00	METAL CHIP	0	5%	1/10W	
R710	1-249-414-11	CARBON	560	5%	1/4W	F
R711	1-249-414-11	CARBON	560	5%	1/4W	F
R714	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R715	1-216-037-00	METAL CHIP	330	5%	1/10W	
R804	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R805	1-249-405-11	CARBON	100	5%	1/4W	F
R806	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R807	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R808	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R810	1-216-025-00	METAL CHIP	100	5%	1/10W	
R811	1-216-037-00	METAL CHIP	330	5%	1/10W	
R812	1-216-037-00	METAL CHIP	330	5%	1/10W	
R813	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R816	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R817	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R823	1-249-417-11	CARBON	1K	5%	1/4W	F
R824	1-249-417-11	CARBON	1K	5%	1/4W	F
R825	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R826	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	

Ref. No.	Part No.	Description	Remark
R827	1-249-421-11	CARBON 2.2K 5% 1/4W	F
R828	1-216-093-00	METAL CHIP 68K 5% 1/10W	
R835	1-249-417-11	CARBON 1K 5% 1/4W	F
R836	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R837	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R838	1-216-296-00	METAL CHIP 0 5% 1/8W	
R852	1-216-083-00	METAL CHIP 27K 5% 1/10W	
R853	1-216-083-00	METAL CHIP 27K 5% 1/10W	
R854	1-216-669-11	METAL CHIP 5.6K 0.5% 1/10W	
R855	1-216-653-11	METAL CHIP 1.2K 0.5% 1/10W	
R859	1-216-295-00	METAL CHIP 0 5% 1/10W	
R866	1-216-001-00	METAL CHIP 10 5% 1/10W	
R868	1-216-081-00	METAL CHIP 22K 5% 1/10W	
⚠R869	1-249-389-11	CARBON 4.7 5% 1/4W (750HF/751HF)	F
⚠R869	1-249-395-11	CARBON 15 5% 1/4W	F (900HF)
R870	1-216-083-00	METAL CHIP 27K 5% 1/10W	(900HF)
⚠R871	1-249-394-11	CARBON 12 5% 1/6W	F (900HF)
R872	1-216-295-00	METAL CHIP 0 5% 1/10W	
R898	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R899	1-216-049-00	METAL CHIP 1K 5% 1/10W	
		< RF MODULATOR >	
⚠RF701	1-466-150-11	MODULATOR, RF (RFU-1025)	
		< VARIABLE RESISTOR >	
RV201	1-238-019-11	RES, ADJ, CARBON 47K	
RV202	1-238-019-11	RES, ADJ, CARBON 47K	
RV851	1-238-020-11	RES, ADJ, CARBON 100K	
		< TRANSFORMER >	
T851	1-423-414-11	TRANSFORMER, BIAS OSCILLATION (750HF/751HF)	
T851	1-423-413-11	TRANSFORMER, BIAS OSCILLATION (900HF)	
T852	1-423-415-11	TRANSFORMER, BIAS OSCILLATION (900HF)	
		< TUNER >	
⚠TU802	8-598-039-00	TUNER BTF-WA401	
		< VIBRATOR >	
X201	1-578-774-11	VIBRATOR, CRYSTAL (12MHz)	
X301	1-577-381-11	VIBRATOR, CRYSTAL (17.7MHz)	
X302	1-577-165-11	VIBLATOR, CERAMIC (500KHz)	

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Ref. No.	Part No.	Description	Remark
*	A-6754-462-A	MD-56 BOARD, COMPLETE *********************	
		< CAPACITOR >	
C001	1-161-494-00	CERAMIC 0.022uF	25V
C002	1-161-494-00	CERAMIC 0.022uF	25V
C003	1-126-157-11	ELECT 10uF 20%	16V
C004	1-161-379-00	CERAMIC 0.01uF 20%	25V
C006	1-124-589-11	ELECT 47uF 20%	16V
C008	1-164-159-11	CERAMIC 0.1uF	50V
C009	1-164-159-11	CERAMIC 0.1uF	50V
C022	1-161-379-00	CERAMIC 0.01uF 20%	25V
C025	1-162-294-31	CERAMIC 0.001uF 10%	50V
C026	1-162-294-31	CERAMIC 0.001uF 10%	50V
		< CONNECTOR >	
CN002	1-569-335-11	CONNECTOR, BOARD TO BOARD 9P	
CN003	1-691-643-11	CONNECTOR, BOARD TO BOARD	
CN004	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P	
CN005	1-506-482-11	PIN, CONNECTOR 3P	
CN006	1-569-333-11	CONNECTOR, BOARD TO BOARD 3P	
CN007	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P	
CN009	1-506-484-11	PIN, CONNECTOR 5P	
		< DIODE >	
D001	8-719-985-00	DIODE GL451VS1	
D004	8-719-109-93	DIODE RD6.2ES-B2	
D005	8-719-109-93	DIODE RD6.2ES-B2	
D006	8-719-109-93	DIODE RD6.2ES-B2	
D007	8-719-109-93	DIODE RD6.2ES-B2	
		< IC >	
IC002	8-759-912-77	IC uPC324C	
		< PHOTO INTERRUPTER >	
PH001	8-759-144-33	IC PS6002	
PH002	8-759-144-33	IC PS6002	
		< TRANSISTOR >	
Q001	8-729-926-31	TRANSISTOR PT483F1S	
Q002	8-729-926-31	TRANSISTOR PT483F1S	
		< RESISTOR >	
R001	1-249-423-11	CARBON 3.3K 5% 1/4W	F
R002	1-249-423-11	CARBON 3.3K 5% 1/4W	F
R003	1-249-426-11	CARBON 5.6K 5% 1/4W	
R004	1-249-426-11	CARBON 5.6K 5% 1/4W	
R005	1-249-417-11	CARBON 1K 5% 1/4W	F

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description				Remark
R006	1-249-441-11	CARBON	100K	5%	1/4W	
R007	1-249-441-11	CARBON	100K	5%	1/4W	
R008	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R009	1-249-408-11	CARBON	180	5%	1/4W	F
R010	1-249-422-11	CARBON	2.7K	5%	1/4W	F
R011	1-249-437-11	CARBON	47K	5%	1/4W	
R012	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R015	1-249-437-11	CARBON	47K	5%	1/4W	
R016	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R017	1-249-429-11	CARBON	10K	5%	1/4W	
R018	1-249-429-11	CARBON	10K	5%	1/4W	
R019	1-249-429-11	CARBON	10K	5%	1/4W	
R020	1-249-429-11	CARBON	10K	5%	1/4W	
R023	1-249-414-11	CARBON	560	5%	1/4W	F
		< SWITCH >				
S001	1-570-953-11	SWITCH, PUSH (1 KEY)(C-U/D)				
S002	1-570-953-11	SWITCH, PUSH (1 KEY)(REC PRF)				
**						
*	A-6754-461-A	MF-171 BOARD, COMPLETE (750HF/751HF) ************************************				
*	A-6754-479-A	MF-171 BOARD, COMPLETE (900HF) ******************************				
		< CONNECTOR >				
* CN201	1-691-407-11	CONNECTOR, BOARD TO BOARD 10P				
		< DIODE >				
D201	8-719-940-82	LED SLR34MC3				
D202	8-719-940-82	LED SLR34MC3				
D205	8-719-109-93	DIODE RD6.2ES-B2				
		< IC >				
IC201	1-466-833-11	IC RAY-CATCHER BLOCK, REMOCON				
		< JACK >				
PJ201	1-580-845-11	JACK, PIN 3P (LINE IN 2)				
		< TRANSISTOR >				
Q201	8-729-421-19	TRANSISTOR UN2213				
		< RESISTOR >				
R201	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R202	1-216-022-00	METAL CHIP	75	5%	1/10W	
R203	1-216-295-00	METAL CHIP	0	5%	1/10W	
R204	1-216-295-00	METAL CHIP	0	5%	1/10W	
R205	1-216-021-00	METAL CHIP	68	5%	1/10W	
R207	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	

Ref. No.	Part No.	Description				Remark
		< SWITCH >				
S201	1-571-977-11	SWITCH, TACTIL (POWER ON/OFF)				
S202	1-571-977-11	SWITCH, TACTIL (EJECT)				
**						
*	A-6756-900-A	MF-172 BOARD, COMPLETE (750HF:US/751HF:US) **********************				
*	A-6756-911-A	MF-172 BOARD, COMPLETE (750HF:CND/751HF:CND) **********************				
*	A-6756-913-A	MF-172 BOARD, COMPLETE (900HF:US, MX, CHL, PX) **********************				
*	A-6756-909-A	MF-172 BOARD, COMPLETE (900HF:CND) **********************************				
		< BUZZER >				
BZ101	1-529-104-11	BUZZER, PIEZOELECTRIC				
		< CAPACITOR >				
C101	1-128-057-11	ELECT	330uF	20%	6.3V	
C102	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C103	1-125-486-11	DOUBLE LAYERS	0.22F		5.5V	
C104	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C105	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C106	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C107	1-163-235-11	CERAMIC CHIP	22PF	5%	50V	
C108	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V	
C109	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C110	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C111	1-124-261-00	ELECT	10uF	20%	50V	
C112	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C113	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C114	1-161-329-00	CERAMIC	0.0068uF	20%	16V	
		< CONNECTOR >				
CN101	1-568-079-11	CONNECTOR (RECEPTALE) 20P				
CN102	1-568-079-11	CONNECTOR (RECEPTALE) 20P				
CN103	1-695-947-11	CONNECTOR, BOARD TO BOARD 10P				
CN104	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P				
		< TRIMMER >				
CT101	1-141-291-11	CAP, TRIMMER				
		< DIODE >				
D101	8-719-911-19	DIODE 1SS119				
D102	8-719-911-19	DIODE 1SS119				
D104	8-719-110-08	DIODE RD8.2ES-B2				
D107	8-719-200-82	DIODE 11ES2				

Ref. No.	Part No.	Description	Remark
		< FILTER >	
FL101	1-519-745-11	INDICATOR TUBE, FLUORESCENT	
		< IC >	
IC101	8-759-089-75	IC MB89095-110	
IC102	8-759-502-00	IC ST93CS56B1	
IC103	8-759-520-98	IC PST572K	
IC104	8-759-510-43	IC PST572C	
		< JUMPER RESISTOR >	
JR101	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR104	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR111	1-216-295-00	METAL CHIP 0 5% 1/10W	
		< COIL >	
L101	1-410-509-11	INDUCTOR 10uH	
		< RESISTOR >	
R101	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R102	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R103	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R104	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R105	1-216-295-00	METAL CHIP 0 5% 1/10W (750HF:US/751HF:US)	
R105	1-216-065-00	METAL CHIP 4.7K 5% 1/10W (750HF:CND/751HF:CND)	
R105	1-216-057-00	METAL CHIP 2.2K 5% 1/10W (900HF:US, MX, CHL, PX)	
R105	1-216-071-00	METAL CHIP 8.2K 5% 1/10W (900HF:CND)	
R107	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R108	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R109	1-216-033-00	METAL CHIP 220 5% 1/10W	
R110	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R111	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R115	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R116	1-216-095-00	METAL CHIP 82K 5% 1/10W	
R117	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R118	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R119	1-216-198-00	METAL CHIP 1K 5% 1/8W	
R120	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R121	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R122	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R123	1-216-295-00	METAL CHIP 0 5% 1/10W	
R126	1-216-041-00	METAL CHIP 470 5% 1/10W	
R127	1-216-041-00	METAL CHIP 470 5% 1/10W	

Ref. No.	Part No.	Description	Remark
R130	1-216-198-00	METAL CHIP 1K 5% 1/8W	
R131	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R132	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R133	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R134	1-249-417-11	CARBON 1K 5% 1/4W	F
R135	1-249-417-11	CARBON 1K 5% 1/4W	F
R136	1-216-041-00	METAL CHIP 470 5% 1/10W	
		< VIBRATOR >	
X101	1-567-098-00	OSCILLATOR, CRYSTAL (32.768KHz)	
X102	1-579-175-11	VIBRATOR, CERAMIC (10MHz)	

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Ref. No.	Part No.	Description	Remark
*	A-6756-901-A	MF-173 BOARD, COMPLETE (750HF/751HF)	

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Ref. No.	Part No.	Description	Remark
*	A-6756-914-A	MF-173 BOARD, COMPLETE (900HF)	

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Ref. No.	Part No.	Description	Remark
		< CAPACITOR >	
C001	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
		< CONNECTOR >	
CN001	1-569-338-11	CONNECTOR, BOARD TO BOARD 19P	
CN002	1-580-850-11	CONNECTOR (DMS) 8P	
		< DIODE >	
D001	8-719-940-99	LED SLR34VC3 (STEREO)	
D002	8-719-940-99	LED SLR34VC3 (TIMER REC)	
D003	8-719-940-99	LED SLR34VC3 (REC)	
D004	8-719-812-32	LED TLY123 (FF)	
D005	8-719-940-82	LED SLR34MC3 (FORWARD)	
D006	8-719-946-30	LED SLR34DC3 (PAUSE)	
D007	8-719-940-82	LED SLR34MC3 (REVERSE)	
D008	8-719-812-32	LED TLY123 (REW)	
D009	8-719-812-32	LED TLY123 (HI-SPEED REWIND)	
D010	8-719-940-99	LED SLR34VC3 (INSERT:AUDIO) (900HF)	
D011	8-719-940-99	LED SLR34VC3 (INSERT:VIDEO) (900HF)	
D012	8-719-946-30	LED SLR34DC3 (APC)	
		< JUMPER RESISTOR >	
JR031	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR032	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR033	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR034	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR035	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR036	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR037	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR038	1-216-296-00	METAL CHIP 0 5% 1/8W	

MF-173 POWER BLOCK

Ref. No.	Part No.	Description			Remark
		< TRANSISTOR >			
Q001	8-729-421-19	TRANSISTOR UN2213			
Q002	8-729-421-19	TRANSISTOR UN2213			
Q003	8-729-421-19	TRANSISTOR UN2213			
Q004	8-729-421-19	TRANSISTOR UN2213			
Q005	8-729-421-19	TRANSISTOR UN2213			
Q006	8-729-421-19	TRANSISTOR UN2213			
Q007	8-729-421-19	TRANSISTOR UN2213 (900HF)			
Q008	8-729-421-19	TRANSISTOR UN2213 (900HF)			
Q009	8-729-421-19	TRANSISTOR UN2213			
		< RESISTOR >			
R001	1-216-073-00	METAL CHIP	10K	5%	1/10W
R002	1-216-073-00	METAL CHIP	10K	5%	1/10W
R003	1-216-073-00	METAL CHIP	10K	5%	1/10W
R004	1-216-073-00	METAL CHIP	10K	5%	1/10W
R005	1-216-073-00	METAL CHIP	10K	5%	1/10W
R006	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R007	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R008	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R009	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R010	1-216-073-00	METAL CHIP	10K	5%	1/10W
R011	1-216-081-00	METAL CHIP	22K	5%	1/10W
R012	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R013	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R014	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R015	1-216-089-00	METAL CHIP	47K	5%	1/10W
R016	1-216-081-00	METAL CHIP	22K	5%	1/10W
R023	1-216-037-00	METAL CHIP	330	5%	1/10W
R024	1-216-035-00	METAL CHIP	270	5%	1/10W
R025	1-216-035-00	METAL CHIP	270	5%	1/10W
R026	1-216-031-00	METAL CHIP	180	5%	1/10W
R027	1-216-031-00	METAL CHIP	180	5%	1/10W
R028	1-216-037-00	METAL CHIP	330	5%	1/10W
R029	1-216-031-00	METAL CHIP	180	5%	1/10W
R030	1-216-031-00	METAL CHIP	180	5%	1/10W
R031	1-216-031-00	METAL CHIP	180	5%	1/10W
R032	1-216-037-00	METAL CHIP (900HF)	330	5%	1/10W
R033	1-216-037-00	METAL CHIP (900HF)	330	5%	1/10W
R034	1-216-035-00	METAL CHIP	270	5%	1/10W
R035	1-216-075-00	METAL CHIP	12K	5%	1/10W
		< SWITCH >			
S001	1-571-977-11	SWITCH, TACTIL (REC)			
S002	1-571-977-11	SWITCH, TACTIL (INPUT SELECT)			
S003	1-571-977-11	SWITCH, TACTIL (CHANNEL +)			
S004	1-571-977-11	SWITCH, TACTIL (CHANNEL -)			
S005	1-571-977-11	SWITCH, TACTIL (TV/VTR)			
S006	1-571-977-11	SWITCH, TACTIL (PAUSE)			
S007	1-571-977-11	SWITCH, TACTIL (HI-SPEED REWIND)			
S008	1-571-977-11	SWITCH, TACTIL (TIMER REC ON/OFF)			
S009	1-572-907-11	SWITCH, SLIDE (PICTURE)			
S012	1-571-977-11	SWITCH, TACTIL (APC)			
S901	1-572-662-11	SWITCH, ROTARY (DUAL MODE SHUTTLE)			
**					
⚠	1-413-788-11	POWER BLOCK (750HF/751HF) ************************			
		< CAPACITOR >			
⚠C101	9-900-521-01	METAL FILM	0.1uF		125V
⚠C102	9-900-521-01	METAL FILM	0.1uF		125V
⚠C103	9-903-930-01	CERAMIC	470PF		125V
⚠C104	9-903-930-01	CERAMIC	470PF		125V
⚠C105	9-900-522-01	CERAMIC	2200PF		125V
⚠C106	9-903-931-01	ELECT	150uF		200V
C107	1-124-906-01	ELECT	4.7uF		50V
C108	9-902-055-01	CERAMIC	100PF		1KV
C109	9-900-525-01	METAL FILM	0.047uF		400V
C110	1-130-491-00	ELECT	0.047uF		50V
C111	1-130-491-00	ELECT	0.047uF		50V
C201	1-126-964-11	ELECT	10uF		50V
C202	1-126-768-11	ELECT	2200uF		16V
C203	1-126-933-11	ELECT	100uF		16V
C204	1-126-927-11	ELECT	2200uF		10V
C205	1-126-925-11	ELECT	470uF		10V
C206	1-126-968-11	ELECT	100uF		50V
C207	1-126-916-11	ELECT	1000uF		6.3V
C208	1-126-960-11	ELECT	1uF		50V
C209	1-130-483-00	ELECT	0.01uF		50V
C210	1-130-483-00	ELECT	0.01uF		50V
		< CONNECTOR >			
CN1	1-568-787-11	CONNECTOR 10P			
CN2	1-568-786-21	CONNECTOR 9P			
⚠CN101	9-903-934-01	CONNECTOR 2P			
		< DIODE >			
⚠D101	9-900-511-01	BRIDGE DIODE S1WBA60			
⚠D102	9-900-512-01	DIODE AG01A			
⚠D103	8-719-920-32	DIODE ERA15-02			
⚠D104	9-902-757-01	ZENER DIODE MA4030			
⚠D105	9-900-514-01	DIODE MA165			
⚠D106	9-902-050-01	DIODE ERA15-06			
⚠D201	9-900-535-01	DIODE AU02Z			
⚠D202	9-902-061-01	DIODE RG4Z			

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Ref. No.	Part No.	Description			Remark
⚠D203	8-719-920-32	DIODE ERA15-02			
⚠D204	9-902-062-01	DIODE ERB81-004			
⚠D206	9-900-535-01	DIODE AU02Z			
⚠D207	9-902-064-01	DIODE ERA81-004			
⚠D208	9-903-932-01	ZENER DIODE MA2150			
		< FUSE >			
⚠F101	1-533-296-11	FUSE (125V 2A)			
		< FERRITE BEAD >			
⚠FB1	9-903-929-01	BEADS CORE			
		< IC >			
⚠IC201	9-900-532-01	IC AN1431T			
		< COIL >			
⚠L101	9-900-520-01	LINE FILTER	0.5A	39mH	
L202	9-902-762-01	CHOKE COIL	20uH		
L203	9-902-762-01	CHOKE COIL	20uH		
		< PHOTO COUPLER >			
⚠PC101	9-900-519-01	PHOTO COUPLER ON3131			
		< IC LINK >			
⚠PS201	1-532-637-00	IC LINK			
		< TRANSISTOR >			
⚠Q101	9-902-096-01	TRANSISTOR 2SC4054			
⚠Q102	9-900-517-01	TRANSISTOR 2SC3377			
		< RESISTOR >			
⚠R101	1-202-917-00	SOLID	6.8M	1/2W	
R102	1-247-879-00	CARBON	100K	1/4W	
R103	1-247-879-00	CARBON	100K	1/4W	
R104	1-247-855-00	CARBON	10K	1/4W	
R106	9-902-057-01	METAL OXIDE	47K	3W	
R107	1-247-736-11	CARBON	56	1/2W	F
R108	1-247-736-11	CARBON	56	1/2W	F
R109	1-247-826-00	CARBON (FOR ADJUSTMENT)	(620)	1/4W	
⚠R201	1-247-727-11	CARBON	10	1/2W	F
⚠R202	1-247-727-11	CARBON	10	1/2W	F
⚠R203	1-212-857-00	FUSE	10	1/4W	F
⚠R204	9-902-074-01	FUSE	0.47	1/4W	F
R205	1-244-841-11	CARBON	47	1/2W	
R206	1-215-428-00	METAL	2K	1/4W	
R207		CARBON (FOR ADJUSTMENT)			
R208	1-215-425-00	METAL (FOR ADJUSTMENT)	(1.5K)	1/4W	
		< TRANSFORMER >			
⚠T101	9-903-928-01	SWITCHNG TRANSFORMER			
		< VARIABLE RESISTOR >			
VR201	9-902-761-01	RES, ADJ, METAL			

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Ref. No.	Part No.	Description			Remark
⚠	1-413-792-11	POWER BLOCK (900HF:US, CND, MX) ****************************			
		< CAPACITOR >			
⚠C101	9-900-521-01	FILM	0.1uF		
⚠C102	9-900-521-01	FILM	0.1uF		
⚠C103	9-904-227-01	CERAMIC	1000PF		
⚠C104	9-904-227-01	CERAMIC	1000PF		
⚠C105	9-904-228-01	CERAMIC	470PF		
⚠C106	9-904-229-01	ELECT	180uF	200V	
C107	9-900-525-01	FILM	0.047uF	400V	
C108	9-904-226-01	CERAMIC	330PF	2KV	
C109	1-130-495-00	FILM	0.1uF	50V	
C110	9-904-230-01	ELECT	1uF	100V	
C111	1-130-495-00	FILM	0.1uF	50V	
C112	1-130-491-00	FILM	0.047uF	50V	
⚠C115	9-904-228-01	CERAMIC	470PF		
C201	1-124-122-11	ELECT	100uF	50V	
C202	1-124-445-11	ELECT	100uF	16V	
C203	9-900-382-01	CERAMIC	1000PF	1KV	
C204	1-126-934-11	ELECT	220uF	16V	
C205	9-903-982-01	ELECT	1500uF	10V	
C207	9-903-910-01	ELECT	2700uF	16V	
C209	1-124-903-11	ELECT	1uF	50V	
C210	1-124-472-11	ELECT	470uF	10V	
C212	1-124-122-11	ELECT	100uF	50V	
C213	9-903-983-01	ELECT	1200uF	6.3V	
C214	1-130-483-00	FILM	0.01uF	50V	
C215	1-130-483-00	FILM	0.01uF	50V	
C216	1-130-495-00	FILM	0.1uF	50V	
		< CONNECTOR >			
CN201	1-568-787-11	CONNECTOR			
CN202	1-568-786-21	CONNECTOR			
⚠CN101	9-902-089-01	INLET			

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POWER BLOCK

Ref. No.	Part No.	Description			Remark
		< DIODE >			
⚠D101	9-900-511-01	BRIDGE DIODE S1WBA60			
⚠D102	9-900-513-01	DIODE EG01C			
⚠D103	9-900-369-01	DIODE AC01Z			
⚠D104	9-900-513-01	DIODE EG01C			
⚠D105	9-904-222-01	ZENER DIODE RD2.4ES			
⚠D106	9-903-904-01	DIODE 1SS270A			
⚠D201	9-900-369-01	DIODE AC01Z			
⚠D202	9-904-224-01	ZENER DIODE RD39FB			
⚠D203	9-903-969-01	DIODE RK49			
⚠D204	9-902-768-01	DIODE RL4Z			
⚠D205	9-900-369-01	DIODE AC01Z			
⚠D206	9-903-975-01	DIODE RL2Z			
⚠D208	9-903-975-01	DIODE RL2Z			
⚠D209	9-903-970-01	ZENER DIODE RD3.6ES			
		< FUSE >			
⚠F101	1-532-743-11	FUSE (125V 2A)			
		< IC >			
⚠IC201	9-900-533-01	IC HA17431P			
⚠IC202	8-759-400-28	IC AN79L24			
		< COIL >			
⚠L101	9-904-216-01	COMMON MODE	0.4A	22mH	
⚠L102	9-903-995-01	BEADS CORE			
⚠L201	9-903-993-01	CHOKE COIL	1.3A	39uH	
⚠L202	9-903-997-01	BEADS CORE			
⚠L203	9-903-993-01	CHOKE COIL	1.3A	39uH	
⚠L204	9-904-218-01	BEADS CORE			
		< PHOTO COUPLER >			
⚠PC101	8-719-902-56	PHOTO COUPLER PC817			
		< IC LINK >			
⚠PS201	1-532-637-11	IC LINK			
		< TRANSISTOR >			
⚠Q101	9-902-076-01	TRANSISTOR 2SC4054			
⚠Q102	9-900-517-01	TRANSISTOR 2SC3377			
⚠Q103	9-900-517-01	TRANSISTOR 2SC3377			
		< RESISTOR >			
⚠R101	9-902-056-01	SOLID	6.8M	1/2W	
R102	1-215-927-00	METAL OXIDE	47K	3W	
R103	1-246-521-00	CARBON	100K	1/4W	
R104	1-246-521-00	CARBON	100K	1/4W	

Ref. No.	Part No.	Description			Remark
R106	1-246-521-00	CARBON	100K	1/4W	
R107	9-904-231-00	METAL OXIDE	68	1W	
R108	9-904-232-01	METAL	360	1/4W	
R109	1-246-433-00	CARBON	390	1/4W	
R110	1-246-821-00	CARBON	390	1/4W	
⚠R201	9-902-073-01	RESISTOR, FUSE	10	1/4W	
R203	9-903-987-01	RESISTOR, FUSE	0.1	1/6W	
R205	1-246-471-00	CARBON	820	1/4W	
R207	1-246-471-00	CARBON	820	1/4W	
⚠R210	1-247-735-00	CARBON	47	1/2W	F
		< VARIABLE RESISTOR >			
RV201	9-903-912-01	RES, ADJ, CARBON 500 1/3W			
		< TRANSFORMER >			
⚠T101	9-904-215-01	TRANSFORMER			

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Ref. No.	Part No.	Description			Remark
⚠	1-413-793-11	POWER BLOCK (900HF:CHL, PX) ***************************			
		< CAPACITOR >			
⚠C101	9-902-933-01	FILM	0.22uF	250V	
⚠C102	9-902-934-01	FILM	0.1uF	250V	
⚠C103	9-903-976-01	CERAMIC	2200PF	400V	
⚠C104	9-903-976-01	CERAMIC	2200PF	400V	
C106	9-903-980-01	ELECT	220uF	400V	
C107	9-903-974-01	FILM	0.047uF	630V	
C108	9-903-977-01	CERAMIC	100PF	2KV	
C109	1-130-491-51	FILM	1000PF	50V	
C110	9-903-981-01	ELECT	1uF	200V	
C111	1-130-483-51	FILM	0.01uF	50V	
⚠C113	9-903-978-01	CERAMIC	3300PF	400V	
⚠C115	9-903-979-01	CERAMIC	2200PF	400V	
⚠C116	9-903-979-01	CERAMIC	2200PF	400V	
C201	1-124-122-51	ELECT	100uF	50V	
C202	1-124-445-51	ELECT	100uF	16V	
C203	9-900-382-01	CERAMIC	1000PF	1KV	
C204	1-126-934-51	ELECT	220uF	16V	
C205	9-903-982-01	ELECT	1500uF	10V	
C207	9-903-910-01	ELECT	2700uF	16V	
C209	1-124-903-51	ELECT	1uF	50V	
C210	1-124-472-51	ELECT	470uF	10V	
C212	1-124-122-51	ELECT	100uF	50V	
C213	9-903-983-01	ELECT	1200uF	6.3V	
C214	1-130-483-51	FILM	0.01uF	50V	
C215	1-130-483-51	FILM	0.01uF	50V	
C216	1-130-495-51	FILM	0.1uF	50V	

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Ref. No.	Part No.	Description			Remark
		< CONNECTOR >			
⚠CN101	1-562-985-11	INLET			
CN201	1-568-787-11	CONNECTOR 10P			
CN202	1-568-786-21	CONNECTOR 9P			
		< DIODE >			
⚠D101	9-900-511-01	RECTIFIER DIODE S1WBA60			
⚠D102	9-900-513-01	DIODE EG1C			
D103	9-903-904-01	DIODE 1SS270A			
⚠D104	9-900-513-01	DIODE EG1C			
D105	9-903-970-01	ZENER DIODE RD3.6ESB			
D106	9-903-904-01	DIODE 1SS270A			
D201	9-903-967-01	DIODE AG01			
D202	9-903-972-01	ZENER DIODE RD36FB			
D203	9-903-969-01	DIODE RK49			
⚠D204	9-902-768-01	DIODE RL4Z			
⚠D205	9-900-369-01	DIODE AG01Z			
⚠D206	9-900-369-01	DIODE AG01Z			
⚠D208	9-903-975-01	DIODE RL2Z			
D209	9-903-970-01	ZENER DIODE RD3.6ESB			
		< FUSE >			
⚠F101	1-532-388-51	FUSE (250V 2A)			
		< HYBRID IC >			
⚠HIC101	9-903-964-01	HYBRID IC HB100			
		< IC >			
⚠IC201	9-900-533-01	IC HA17431P			
⚠IC202	8-759-400-28	IC AN79L24			
		< COIL >			
⚠L101	9-903-991-01	COMMON MODE			
⚠L102	9-903-995-01	BEADS CORE			
⚠L201	9-903-993-01	CHOKE COIL			
⚠L202	9-903-997-01	BEADS CORE			
⚠L203	9-903-993-01	CHOKE COIL			
		< PHOTO COUPLER >			
⚠PC101	9-903-966-01	COUPLER, PHOTO PS2561			
		< TRANSISTOR >			
⚠Q101	9-903-962-01	TRANSISTOR 2SK2056			
		< RESISTOR >			
R100	9-903-988-01	METAL FILM	2.7M		1/2W
⚠R101	9-903-984-01	WIRE WOUND	2.2		3W
⚠R102	9-903-985-01	METAL OXIDE FILM	100K		3W
R103	1-246-531-25	CARBON	270K		1/4W
R104	1-246-531-25	CARBON	270K		1/4W
⚠R105	9-903-985-01	METAL OXIDE FILM	100K		3W
R106	1-246-521-25	CARBON	100K		1/4W
R107	9-903-989-01	METAL FILM	220		1W
⚠R108	9-903-986-01	METAL FILM	0.15		2W
R109	1-246-433-25	CARBON	22		1/4W
⚠R110	1-247-753-51	METAL FILM	1.2K		1/2W
R111	1-246-477-25	CARBON	1.5K		1/4W
⚠R201	9-902-073-01	FUSE	10		1/4W
⚠R203	9-903-987-01	FUSE	0.1		1/6W
R205	1-246-471-25	CARBON	1K		1/4W
R207	1-246-471-25	CARBON	1K		1/4W
⚠R210	1-247-735-51	CARBON	47		1/2W F
R213	1-246-473-25	CARBON	1K		1/4W
		< VARIABLE RESISTOR >			
RV201	9-903-912-01	RES, ADJ CARBON			
		< TRANSFORMER >			
⚠T101	9-903-990-01	TRANCE, CONVERTOR	500		1/3W
**					
*	A-6727-473-A	RP-149 BOARD, COMPLETE (750HF/751HF)			
		************************************			
*	A-6727-474-A	PR-149 BOARD, COMPLETE (900HF)			
		******************************			
	3-682-057-11	SPACER (SMALL)			
*	3-951-091-01	CASE (LID), SHIELD, RP			
		< CAPACITOR >			
C100	1-164-232-11	CERAMIC CHIP	0.01uF		50V (900HF)
C103	1-163-251-11	CERAMIC CHIP	100PF	5%	50V (900HF)
C104	1-163-121-00	CERAMIC CHIP	150PF	5%	50V (900HF)
C105	1-163-245-11	CERAMIC CHIP	56PF	5%	50V (900HF)
C106	1-163-038-00	CERAMIC CHIP	0.1uF		25V (900HF)
C107	1-126-157-11	ELECT	10uF	20%	16V (900HF)
C260	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C261	1-124-584-00	ELECT	100uF	20%	10V
C262	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C263	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C264	1-124-257-00	ELECT	2.2uF	20%	50V
C265	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C267	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C270	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C273	1-163-031-11	CERAMIC CHIP	0.01uF		50V

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Ref. No.	Part No.	Description			Remark
C274	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C275	1-126-160-11	ELECT	1uF	20%	50V
C276	1-162-306-11	CERAMIC	0.01uF	20%	16V
C277	1-163-234-11	CERAMIC CHIP	20PF	5%	50V
C280	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C281	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C290	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C801	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C802	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C803	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C804	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C805	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C806	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C807	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C808	1-124-584-00	ELECT	100uF	20%	10V
C809	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C810	1-124-584-00	ELECT	100uF	20%	10V
C811	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C812	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C813	1-124-252-00	ELECT	0.33uF	20%	50V
C814	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C815	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C816	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C817	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C818	1-163-104-00	CERAMIC CHIP	30PF	5%	50V
C819	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C820	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C822	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C823	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C824	1-124-589-11	ELECT	47uF	20%	16V
C825	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C826	1-124-589-11	ELECT	47uF	20%	16V
C827	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C828	1-162-306-11	CERAMIC	0.01uF	20%	16V
C832	1-162-306-11	CERAMIC	0.01uF	20%	16V
C834	1-163-222-11	CERAMIC CHIP	5PF	0.25PF	50V
C835	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C836	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C840	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C841	1-124-589-11	ELECT	47uF	20%	16V
C843	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C844	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C887	1-162-306-11	CERAMIC	0.01uF	20%	16V
C890	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C891	1-163-031-11	CERAMIC CHIP	0.01uF		50V

< CONNECTOR >

	CN801	1-563-590-11	CONNECTOR, FLEXIBLE 13P			
	CN802	1-569-338-11	CONNECTOR, BOARD TO BOARD 19P			
*	CN803	1-564-029-00	PIN, CONNECTOR 4P			
	CN804	1-506-484-11	PIN, CONNECTOR 5P			

< DIODE >

D801	8-719-911-19	DIODE 1SS119	
D802	8-719-911-19	DIODE 1SS119	
D803	8-719-911-19	DIODE 1SS119	
D804	8-719-911-19	DIODE 1SS119	
D805	8-719-400-18	DIODE MA152WK	
D806	8-719-400-18	DIODE MA152WK	

< IC >

IC260	8-759-055-49	IC AN3327K	
IC801	8-759-046-75	IC HA118162NT	

< JUMPER RESISTOR >

JR811	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR812	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR813	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR814	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR815	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR816	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR817	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR818	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR819	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR820	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR821	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR822	1-216-296-00	METAL CHIP	0	5%	1/8W	(900HF)
JR823	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR824	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR825	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR826	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR827	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR828	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR829	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR830	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR831	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR832	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR834	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR835	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR837	1-216-296-00	METAL CHIP	0	5%	1/8W	

< COIL >

L100	1-410-507-11	INDUCTOR 6.8uH	(900HF)
L101	1-414-189-31	INDUCTOR 100uH	(900HF)
L260	1-414-189-31	INDUCTOR 100uH	
L261	1-414-187-11	INDUCTOR 47uH	
L801	1-410-336-11	INDUCTOR 220uH	

Ref. No.	Part No.	Description	Remark
L802	1-410-336-11	INDUCTOR 220uH	
L803	1-414-189-31	INDUCTOR 100uH	
L804	1-414-189-31	INDUCTOR 100uH	
L806	1-410-516-11	INDUCTOR 39uH	
L807	1-410-518-41	INDUCTOR 56uH	
L809	1-410-512-11	INDUCTOR 18uH	
L810	1-414-192-31	INDUCTOR 180uH	
L811	1-414-189-31	INDUCTOR 100uH	
L812	1-414-189-31	INDUCTOR 100uH	
L815	1-410-509-11	INDUCTOR 10uH	
L816	1-410-509-11	INDUCTOR 10uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q100	8-729-216-22	TRANSISTOR 2SA1162 (900HF)	
Q101	8-729-216-22	TRANSISTOR 2SA1162 (900HF)	
Q102	8-729-421-19	TRANSISTOR UN2213 (900HF)	
Q802	8-729-230-49	TRANSISTOR 2SC2712-G	
Q803	8-729-424-18	TRANSISTOR UN2113	
Q804	8-729-230-49	TRANSISTOR 2SC2712-G	
Q805	8-729-216-22	TRANSISTOR 2SA1162	
Q806	8-729-216-22	TRANSISTOR 2SA1162	
Q807	8-729-230-49	TRANSISTOR 2SC2712-G	
Q809	8-729-230-49	TRANSISTOR 2SC2712-G	
Q810	8-729-421-19	TRANSISTOR UN2213	
Q811	8-729-301-98	TRANSISTOR 2SB1000A-L	
Q812	8-729-230-49	TRANSISTOR 2SC2712-G	
Q814	8-729-421-19	TRANSISTOR UN2213	
Q822	8-729-216-22	TRANSISTOR 2SA1162	
Q823	8-729-216-22	TRANSISTOR 2SA1162	
Q824	8-729-216-22	TRANSISTOR 2SA1162	
Q826	8-729-424-18	TRANSISTOR UN2113	
Q827	8-729-421-19	TRANSISTOR UN2213	
Q828	8-729-421-19	TRANSISTOR UN2213	
Q829	8-729-421-19	TRANSISTOR UN2213	
Q830	8-729-421-19	TRANSISTOR UN2213	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R101	1-216-011-00	METAL CHIP 27 5% 1/10W(900HF)	
R104	1-216-041-00	METAL CHIP 470 5% 1/10W(900HF)	
R105	1-247-836-11	CARBON 1.6K 5% 1/4W (900HF)	
R106	1-216-095-00	METAL CHIP 82K 5% 1/10W(900HF)	
R107	1-216-089-00	METAL CHIP 47K 5% 1/10W(900HF)	
R108	1-216-689-11	METAL CHIP 39K 0.5% 1/10W(900HF)	
R262	1-216-035-00	METAL CHIP 270 5% 1/10W	
R263	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R265	1-216-033-00	METAL CHIP 220 5% 1/10W	
R266	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R267	1-216-035-00	METAL CHIP 270 5% 1/10W	

Ref. No.	Part No.	Description	Remark
R271	1-216-079-00	METAL CHIP 18K 5% 1/10W	
R272	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R290	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R801	1-216-025-00	METAL CHIP 100 5% 1/10W	
R802	1-216-037-00	METAL CHIP 330 5% 1/10W	
R804	1-216-605-11	METAL CHIP 12 1% 1/10W	
R806	1-216-025-00	METAL CHIP 100 5% 1/10W	
R807	1-216-025-00	METAL CHIP 100 5% 1/10W	
R808	1-216-625-11	METAL CHIP 82 0.5% 1/10W	
R809	1-216-617-11	METAL CHIP 39 1% 1/10W	
R810	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R811	1-216-037-00	METAL CHIP 330 5% 1/10W	
R812	1-216-025-00	METAL CHIP 100 5% 1/10W	
R813	1-216-047-00	METAL CHIP 820 5% 1/10W	
R815	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R816	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R817	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R818	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R819	1-216-198-00	METAL CHIP 1K 5% 1/8W	
R820	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R821	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R822	1-216-039-00	METAL CHIP 390 5% 1/10W	
R823	1-216-047-00	METAL CHIP 820 5% 1/10W	
R824	1-216-039-00	METAL CHIP 390 5% 1/10W	
R825	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R826	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R827	1-216-045-00	METAL CHIP 680 5% 1/10W	
R828	1-216-043-00	METAL CHIP 560 5% 1/10W	
R830	1-216-046-00	METAL CHIP 750 5% 1/10W	
R831	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R832	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R833	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R834	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R838	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R839	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R840	1-249-421-11	CARBON 2.2K 5% 1/4W	F
R845	1-216-047-00	METAL CHIP 820 5% 1/10W	
R853	1-216-218-00	METAL GLAZE 6.8K 5% 1/8W	
R854	1-216-218-00	METAL GLAZE 6.8K 5% 1/8W	
R855	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R856	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R857	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R858	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R859	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R860	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R861	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R862	1-249-427-11	CARBON 6.8K 5% 1/4W	F
R863	1-216-037-00	METAL CHIP 330 5% 1/10W	
R864	1-216-309-00	METAL CHIP 5.6 5% 1/10W	

Ref. No.	Part No.	Description	Remark
R870	1-249-429-11	CARBON 10K 5% 1/4W	
R871	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R872	1-249-409-11	CARBON 220 5% 1/4W	F
R885	1-216-198-00	METAL CHIP 1K 5% 1/8W	
R887	1-216-296-00	METAL CHIP 0 5% 1/8W	
R888	1-216-296-00	METAL CHIP 0 5% 1/8W	
R891	1-249-417-11	CARBON 1K 5% 1/4W	F

****

*	A-6754-499-A	ST-52 BOARD, COMPLETE

****

< CAPACITOR >

C001	1-102-822-00	CERAMIC	390PF	5%	50V
C002	1-124-907-11	ELECT	10uF	20%	50V

< CONNECTOR >

CN001	1-580-326-11	PIN, CONNECTOR 4P
CN002	1-580-326-11	PIN, CONNECTOR 4P

< DIODE >

D001	8-719-911-19	DIODE 1SS119

< RESISTOR >

R001	1-247-899-11	CARBON	680K	5%	1/4W	
R002	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R003	1-247-891-00	CARBON	330K	5%	1/4W	

****

MISCELLANEOUS

****

24	1-466-916-11	REMOTE COMMANDER (RMT-V129)(900HF)
24	1-466-968-31	REMOTE COMMANDER (RMT-V130)(750HF/751HF)
⚠55	1-413-788-11	POWER BLOCK (750HF/751HF)
⚠55	1-413-792-11	POWER BLOCK (900HF:US, CND, MX)
⚠55	1-413-793-11	POWER BLOCK (900HF:CHL, PX)
FL101	1-517-132-11	INDICATOR TUBE, FLUORESCENT

****

ACCESSORIES & PACKING MATERIALS

****

Ref. No.	Part No.	Description
	1-417-139-11	MATCHING TRANSFORMER, ANTENNA (750HF/751HF/900HF:US, CND, PX)
	1-417-182-11	CONVERTER (EAC-25) (900HF:MX, CHL)
	1-466-905-11	CABLE MOUSE
⚠	1-569-008-11	ADAPTER, CONVERSION 2P (900HF:CHL)
⚠	1-574-085-11	CORD, POWER(900HF:MX)
⚠	1-574-131-21	CORD, POWER SUPPLY(900HF:CHL)
	1-575-334-11	CORD, CONNECTION
⚠	1-590-135-31	CORD, POWER(750HF/751HF/900HF:US, CND, PX)
	1-696-592-11	CORD, CONNECTION (NTSC)
	3-756-090-21	MANUAL, INSTRUCTION (ENGLISH)(750HF/751HF)
	3-756-090-31	MANUAL, INSTRUCTION (FRENCH)(750HF:CND/751HF:CND)
	3-756-092-11	MANUAL, INSTRUCTION (ENGLISH, SPANISH)(900HF:MX, CHL, PX)
	3-756-092-21	MANUAL, INSTRUCTION (ENGLISH)(900HF)
	3-756-092-31	MANUAL, INSTRUCTION (FRENCH)(900HF:CND)
*	3-951-094-01	CUSHION (UPPER)
*	3-951-098-01	CUSHION (LOWER)
*	3-951-099-21	INDIVIDUAL CARTON (900HF:US, CND, PX)
*	3-951-099-51	INDIVIDUAL CARTON (750HF)
	3-951-099-61	INDIVIDUAL CARTON (751HF)
	3-953-808-01	INDIVIDUAL CARTON (900HF:MX)
	3-953-809-01	INDIVIDUAL CARTON (900HF:CHL)

****

****

HARDWARE LIST

****

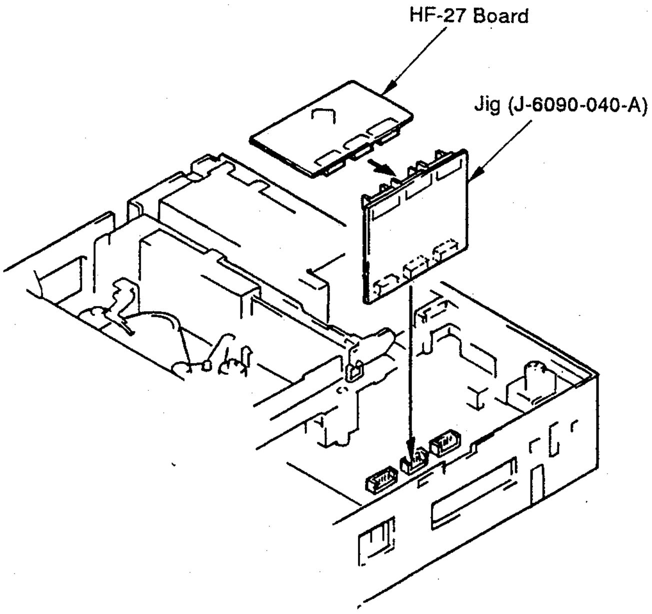
#1	7-621-255-25	SCREW +PTT 2X4 (S)
#4	7-682-645-01	SCREW +PS 3X4
#5	7-685-647-79	SCREW +BVTP 3X10 TYPE2 IT-3
#6	7-682-548-04	SCREW +P 3X8
#7	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S
#8	7-621-732-08	SCREW
#9	7-682-547-04	SCREW +P 3X6
#10	7-628-254-00	SCREW +PS 2.6X5
#11	7-624-102-04	STOP RING 1.5, TYPE -E
#12	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3
#13	7-682-546-04	SCREW +P 3X5

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

SECTION 7
ELECTRICAL ADJUSTMENTS

During the adjustment, see the Parts Arrangement Diagram relevant to the adjustments on Page 162.

- When checking HF-27 board, use th translation board jig (J-6090-040-A).


HF-27 Board
Jig (J-6090-040-A)

7-1. PRE-ADJUSTMENT PREPARATIONS

Necessary items and indications for total adjustment of electric circuit of this machine will be described in this chapter.

7-1-1. Instruments to be Used

1) Color TV
2) Oscilloscope 1 or 2 phenomena, band more than 30 MHz, delay mode, as provided.
3) Frequency counter (min. 8 digits)
4) NTSC pattern generator
5) Digital voltmeter
6) Audio level meter
7) Audio generator
8) Attenuator
9) Distortion factor meter
10) Voice multiple signal generator
11) Alignment tape
    Part Code: H7099046H (MH-1)
12) HiFi alignment tape
    Part Code: H7099153H (Hi-Fi 400 Hz)

7-1-2. Connection

Unless otherwise specified, connect and adjust the measuring instruments as shown in the following diagram.

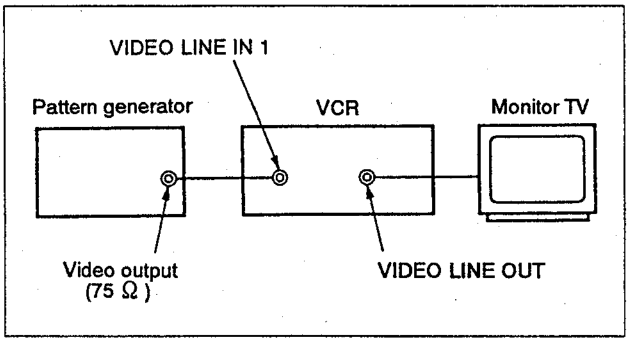

VIDEO LINE IN 1
Pattern generator
VCR
Monitor TV
Video output
(75 Ω)
VIDEO LINE OUT

Fig. 7-1.

7-1-3. Set-up of Adjustment

In this adjustment, NTSC pattern generator is connected with LINE 1 input signal terminal. When check to tuner, connected AERIAL terminal. Check that the amplitudes of video signal SYNC signal, of picture portions, and of burst signals are flat at approximately 0.3, 0.7 and 0.3 V, respectively, and that the level ratio of the burst sigal and "red" signal are 0.30 : 0.66. Fig. 7-2. shows video signals (color bars) used in adjusting the video section.

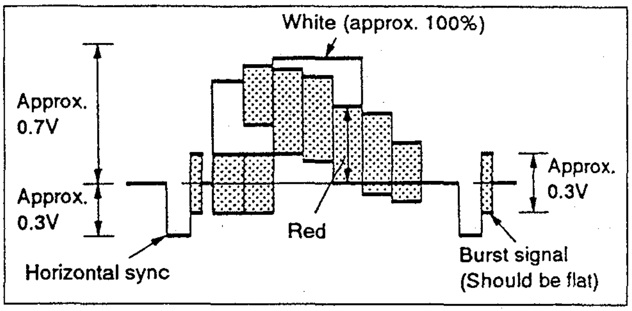

White (approx. 100%)
Approx. 0.7V
Approx. 0.3V
Red
Approx. 0.3V
Horizontal sync
Burst signal (Should be flat)

Fig. 7-2.

7-1-4. Alignment Tapes

[Alignment Tape (MH-1)]

	Mode	Time	Video signal	Audio signal
1	SP	Ten minutes	Stair-step	7 kHz
2		Five minutes	—	3 kHz
3		Ten minutes	Color	1 kHz
4		Three minutes	RF	—

[Hi-Fi Alignment Tape]

	Mode	Time	Video signal	Audio signal
1	SP	Six minutes	Monaural scope	Nomal: no signal HIFI: 400 Hz

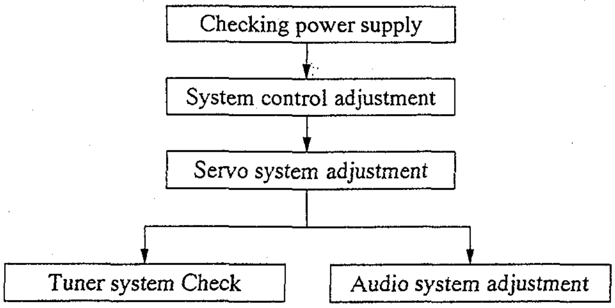
7-1-5. Specified I/O Level and Impedance

Input/output terminal

Video inputs	LINE IN : phono jacks 1 Vp-p, 75 Ω , unbalanced, sync negative
Audio inputs	LINE IN : phono jacks 47 kΩ , − 7.5 dBs (0 dBs = 0.775 Vrms) More than 10 kΩ , − 4 dBs
Video outputs	LINE OUT : phono jack 1 Vp-p, 75 Ω , unbalanced, sync negative
Audio outputs	LINE OUT : phono jack − 7.5 dBs at load impedance 47 kΩ Output impedance : less than 10 kΩ

7-1-6. Adjusting Sequence

Make the electrical adjustment in the following sequence.


Checking power supply
System control adjustment
Servo system adjustment
Tuner system Check
Audio system adjustment

7-2. POWER SUPPLY CHECK (POWER BLOCK)

※ no mark : 900HF, [ ] : 750HF/751HF

Mode	E-E
Measuring Instrument	Digital voltmater
UNSW 6.0 V check	
Measurement Point	Pin ⑤ of CN202 [CN2]
Specified Value	5.9 ± 0.05 Vdc
UNSW − 30 V check	
Measurement Point	Pin ⑤ of CN202 [CN2]
Specified Value	− 27.0 ± 3.0 Vdc
UNSW 35 V check	
Measurement Point	Pin ⑨ of CN202 [CN2]
Specified Value	37.0 ± 3.0 Vdc
UNSW 12 V check	
Measurement Point	Pin ① of CN202 [CN2]
Specified Value	13.6 ± 0.4 Vdc
MTR 12 V check	
Measurement Point	Pin ⑩ of CN201 [CN1]
Specified Value	13.0 ± 0.4 Vdc
HEATER 4 V check	
Measurement Point	+ : Pin ② of CN201 [CN1] − : Pin ① of CN201 [CN1]
Specified Value	4.1 ± 0.3 Vdc

Checking Method:

1) Confirm that each voltage meets its specified value.

POWER BLOCK (Conductor side)

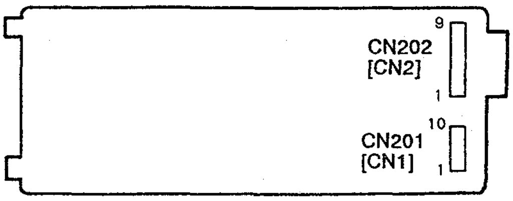

9
CN202
[CN2]
1
10
CN201
[CN1]
1

Fig. 7-3.

7-3. SYSTEM CONTROL ADJUSTMENT

7-3-1. Clock Check (MF-172 Board)

Measurement Point	Pin ⑥ of IC101
Measurement Instrument	Frequency counter
Specified Value	10.0 ± 0.2 MHz

Checking Method:

1) Check the reading on frequency counter 10.0 ± 0.2 MHz.

7-3-2. Clock Adjustment (MF-172 board)

Measurement point	Pin ② of IC101
Measurement Equipment	Frequency counter (Interval counter mode)
Adjustment Element	CT101
Specified Value	0.125 ± 0.0000005 sec

Note: Do not adjustment CT101 except when replacing IC101.

Adjustment Method :

1) Connect the frequency counter as shown below.
2) Set oscillation frequency to the specified value using CT 101.

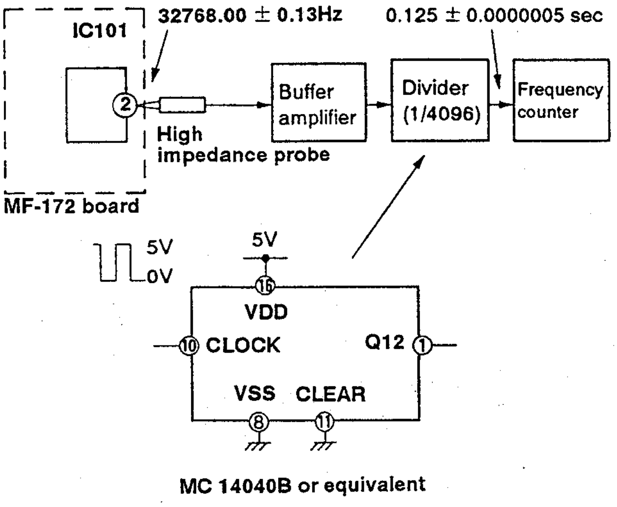

IC101
32768.00 ± 0.13Hz
0.125 ± 0.0000005 sec
②
Buffer amplifier
Divider (1/4096)
Frequency counter
High impedance probe
MF-172 board
5V
0V
5V
⑯
VDD
⑩ CLOCK
Q12 ①
VSS
CLEAR
⑧
⑪
MC 14040B or equivalent

Fig. 7-4.

7-4. SERVO SYSTEM ADJUSTMENT

7-4-1. Switching Position Adjustment (MA-144 Board)

Mode	PB
Signal	Alignment tape : SP stair-step section
Measurement Point	CH1: CNJ701 (VIDEO LINE OUT) CH2: Pin ⑲ of CN601 (RF SWP)
Measuring Instrument	Oscilloscope
Adjusting Element	RV202
Specified Value	6.5 ± 0.5 H (410 ± 30 μsec)

Adjusting Method:

1) Once set to STOP mode, then to PB mode.
2) Check that switching position is 6.5 ± 0.5 H. (410 ± 30 μsec)
If not meet the specified value, turn RV202 and repeat steps 1) to 2).

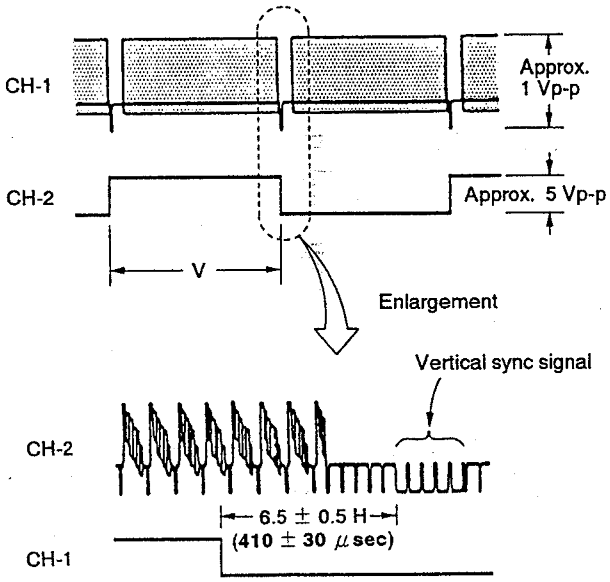

CH-1
Approx. 1 Vp-p
CH-2
Approx. 5 Vp-p
V
Enlargement
Vertical sync signal
CH-2
6.5 ± 0.5 H
(410 ± 30 μsec)
CH-1

Fig. 7-5.

7-5. AUDIO SYSTEM ADJUSTMENTS

- Adjust the audio system in the LP mode, unless otherwise specified.
  Use the alignment tape.
- Adjust both Lch and Rch.

[Connection]

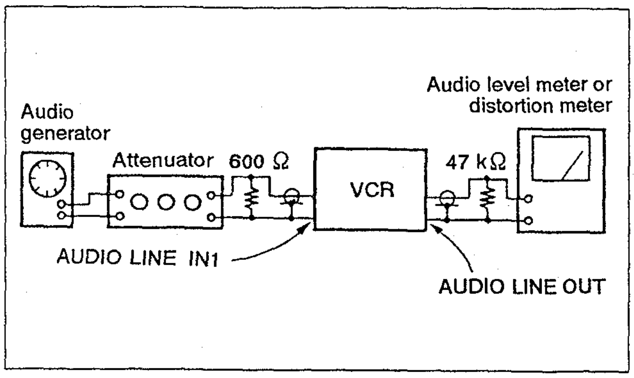


Fig. 7-6.

7-5-1. Hi-Fi Audio System Adjustment

- Set switches and knobs to the following positions to make adjustment unless otherwise specified.
  INPUT SELECT switch ...... LINE 1

[Adjusting Sequence]

1. AF switching position
2. VCO f_o adjustment
3. AFM deviation adjustment
4. BPF f_o adjustment

1. AF Switching Position Adjustment (MA-144 Board)

Mode	PB
Signal	Alignment tape (HiFi 400 Hz)
Measurement Point	CH1: Pin ① of CN857 (MA-144 Board) CH2: Pin ③ of CN803 (RP-149 Board)
Measuring Instrument	Oscilloscope
Adjusting Element	RV201
Specified Value	Fig. 7-6.

Adjusting method:

1) Adjust RV201 for no dropout.
   (Turn and adjust RV201 to the mid-rotation of no dropout range.)

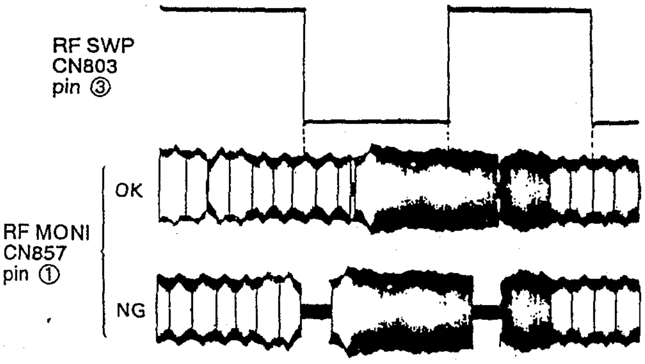


Fig. 7-7

2. VCO f_o Adjustment (HF-27 Board)

Mode	Recording
Signal	No signal
Measuring Instrument	Frequency counter
1.3 MHz Adjustment	
Measurement Point	Pin ㉞ of IC201
Adjusting Element	RV206
Specified Value	1.3 MHz ± 1 kHz
1.7 MHz Adjustment	
Measurement Point	Pin ㊼ of IC201
Adjusting Element	RV202
Specified Value	1.7 MHz ± 1 kHz

Note: Connect the frequency counter through a probe of high input impedance (more than 10 MΩ) and low capacity (10 pF or less)

Adjusting Method:

1) Connect the frequency counter to each measurement point.
2) Adjust each volume so that each frequency meets its specified value.

3. Deviation Adjustment (HF-27 Board)

The adjustment element of the right channel is indicated in [ ].

Mode	Playback
Signal	Hi-Fi alignment tape
Measurement Point	AUDIO LINE OUT left [right]
Measurement Equipment	Audio level meter
Adjustment Element	RV207 [RV203]
Specified Value	– 7.5 ± 0.2 dBs

Adjustment Method:

1) Make sure that "STEREO" segment lights on the fluorescent display.
2) Adjust left [right] channel audio output level to – 7.5 ± 0.2 dBs using RV207 [RV203].

4. BPF fo Adjustment (HF-27 Board)

Mode	PB
Signal	Carrier Frequency : 1,505 MHz, No modulation Input 200 mVp-p : Pin ⑯ of CN202
Measurement Point	Pin ⑱ of CN202 Pin ㊽ of IC201
Measuring Instrument	Oscilloscope
Adjusting Element	RV204

Adjusting Method:

1) Adjust RV204 so that the level Ⓐ goes to the same level as Ⓑ.

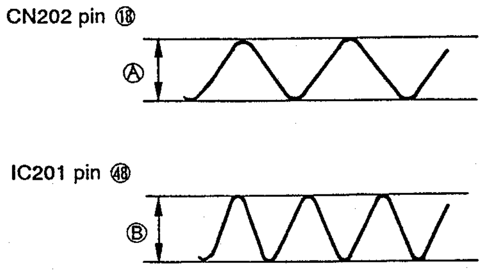


Fig. 7-8.

7-5-2. Normal Audio System Adjustment

- Make adjustment in the SP mode, unless otherwise specified. Use a normal VHS cassette for an adjustment tape.
- Make adjustment with the switches set to the following positions.
  INPUT SELECT switch ...... LINE 1

[Adjusting Sequence]

1. ACE head adjustment ... See Mechanism Block Adjustment
2. E-E output level check
3. Recording bias adjustment
4. Overall level characteristic and distorsion check

1. ACE Head Adjustment

See "Mechanism Block Adjustment".

2. E-E Output Level Check

Mode	E-E
Signal	L, R : 400 Hz, – 7.5 dBs
Measurement Point	AUDIO LINE OUT L or R
Adjusting Element	Audio level meter
Specified Value	– 7.5 ± 2 dBs

Confirming Method:

1) Simultaneously input a signal of 400 Hz, – 7.5 dBs to both L and R channels of Audio Line Input.
2) Confirm that the audio output level is – 7.5 ± 2 dBs.

3. Recording Bias Adjustment (MA-144 Board)

Mode	REC and PB
Signal	400 Hz, – 30 dBs 7 kHz, – 30 dBs
Measurement Point	AUDIO LINE OUT L or R
Measuring Instrument	Audio level meter
Adjusting Element	RV851
Specified Value	0 ± 1 dB

Adjusting Method:

1) Supply a signal of 400 Hz, – 30 dBs to Audio Line Input.
2) Connect the audio level meter to the Audio Line Output.
3) Adjust the attenuator so that the audio level meter will indicate – 30 dBs.
4) Make recording in the SP mode.
5) Set an audio line input signal to 7 kHz and make recording.
6) Playback a recorded portion, and measure output levels at 400 Hz and 7 kHz.
7) Confirm that the 7 kHz playback output levels within a range of the 400 Hz playback output level 0 ± 1 dB. When beyond this range, sdjust RV851 and repeat the steps 1) through 7) above.

4. Overall Level Characteristic and Distortion Factor Check

Mode	REC and PB
Signal	400 Hz, − 7.5 dBs
Measurement Point	AUDIO LINE OUT L or R
Measuring Instrument	Audio level meter and distortion factor gauge
Specified Value	Playback level : − 7.5 ± 2 dBs Distortion factor : 4% or less

Confirming Method:

1) Supply an audio signal of 400 Hz, − 7.5 dBs simultaneously to both L and R channels of Audio Line Input.
2) Make recording.
3) Playback a recorded portion.
4) Confirm that a playback level is − 7.5 ± 2 dBs.
5) Confirm that a distortion factor is within 4%.

7-6. TUNER SYSTEM CHECK

7-6-1. RF AGC Check (MA-144 Board)

Signal	RF : 13 CH, 68 ± 5dB μV (Video: Color Bar Audio: Optional)
Mesurement Point	TU802 Pin ⑦
Measuring Instrument	Digital voltmeter
Specified Value	6.0 ± 0.5 V

Cheking Method:

1) Tune in 13CH.
2) Connect a digital voltmeter to TU802 Pin ⑦ and confirm the reading on a digital voltmeter gose 6.0 ± 0.5 V.

SLV-750HF/751HF/900HF

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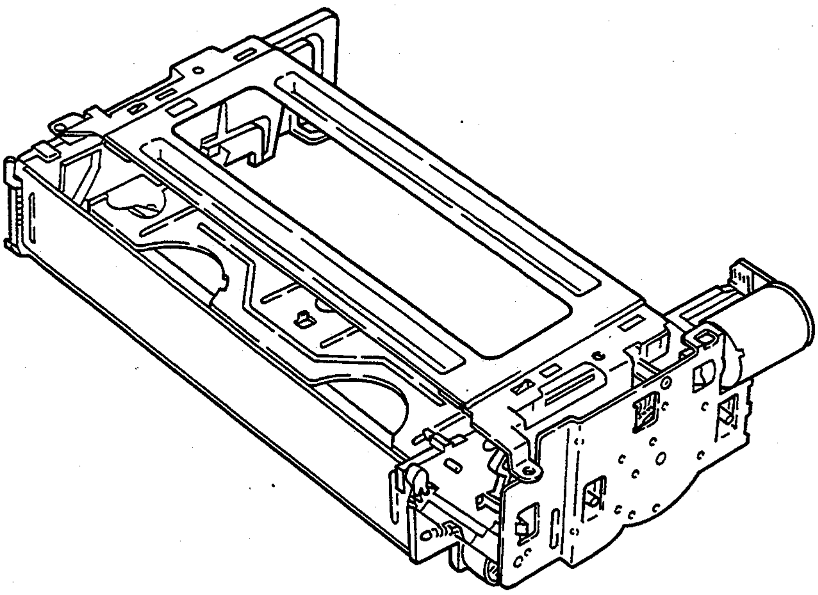
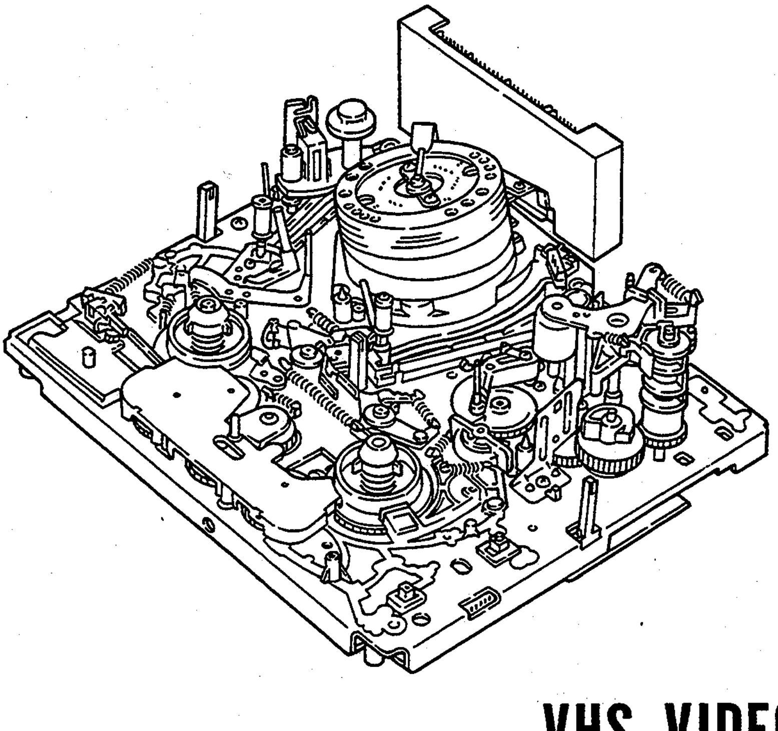
VIDE-V12926

VHS MECHANICAL ADJUSTMENT MANUAL II

- Please use in conjunction with the SERVICE MANUAL.
- This VHS MECHANICAL ADJUSTMENT MANUAL II can be used for NTSC system and PAL system.





VHS VIDEO RECORDER

SONY®

MICROFILM

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1. PREPARATIONS FOR CHECKS, ADJUSTMENTS AND REPLACEMENT OF THE DECK MECHANISM

Note : Refer to "Replacement Method" in the Service Guide for instructions on replacing the cabinet and PC boards. DO not perform cassette loading or threading with the VCR positioned upside-down.

1-1. LOADING AND UNLOADING VIDEO CASSETTES WITH THE POWER OFF. (Fig. 1-1.)

1-1-1. Manual loading and unloading

1) Rotate the loading motor in the direction of arrow Ⓐ until loading is compleated.
   (When unloading, rotate the loading motor in the direction of arrowⒷ.)

1-1-2. Loading and unloading using a separate power source.

1) Cassette loading is performed by applying approx. 10V (300 mA) to the power terminal of the loading motor using a stabilized DC power source.
   (When unloading, apply the same voltage to the opposite polarity of the power terminal.)

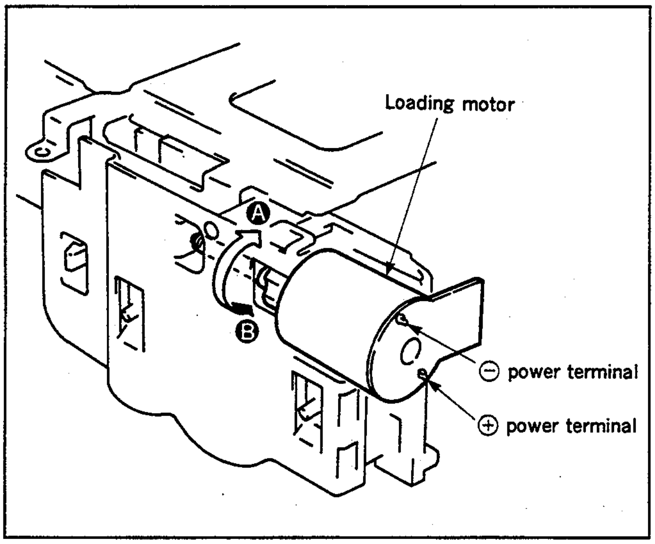


Fig. 1-1.

1-2. THREADING AND UNTHREADING WITH THE POWER OFF. (Fig. 1-2)

1-2-1. Manual threading and unthreading

1) Rotate the cam motor ❶ in the direction of arrowⒶuntil threading is completed.
   (When unthreading, rotate the cam motor ❶ in the direction of arrowⒷ.)

1-2-2. Threading and unthreading using a separate power source.

1) Threading is performed by applying approx. 10V (500 mA) to the power terminal for the cam motor ❶ using a DC stabilized power source.
   (When unthreading, apply the same voltage to the opposite polarity of the power terminal.)

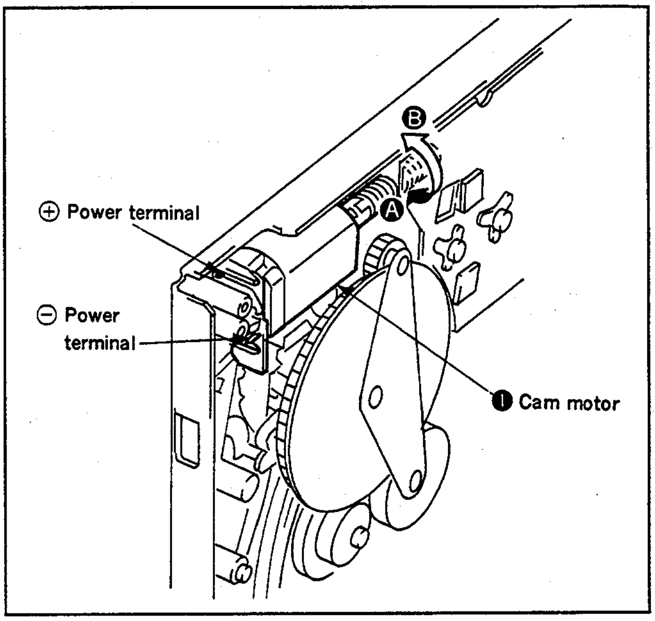


Fig. 1-2.

1-3. TO COMPLETE THREADING WITH THE FL CASSETTE CONTROLLER REMOVED. (Fig. 1-3)

1) Unplug the AC power cord from the power outlet.
2) Shield the supply, take-up sensors and the LED with black-masking tape.
3) Hold the cassatte down switch depressed by taping it, etc.
4) Plug the AC power cord into a power outlet.
   (At this time, the power should turn on and the tape rewinds for approx. 10 seconds, and the power turns off.)
5) Turn the power switch ON so that the mechanism is ready for loading.

Note : In this condition, the VTR is ready to operate in the different operating modes, including the record mode. At this time, rewind the tape for at least 15 seconds, then perform fast forward (FF).

Note : Following the above, be sure to reset the mechanism to the previous state as outlined below.

1) Remove the black-masking tape shielding the supply and take-up sensors, the LED and the tape holding cassette down switch.
2) Unplug the AC power cord from the power outlet to reset the system control microprocessor.

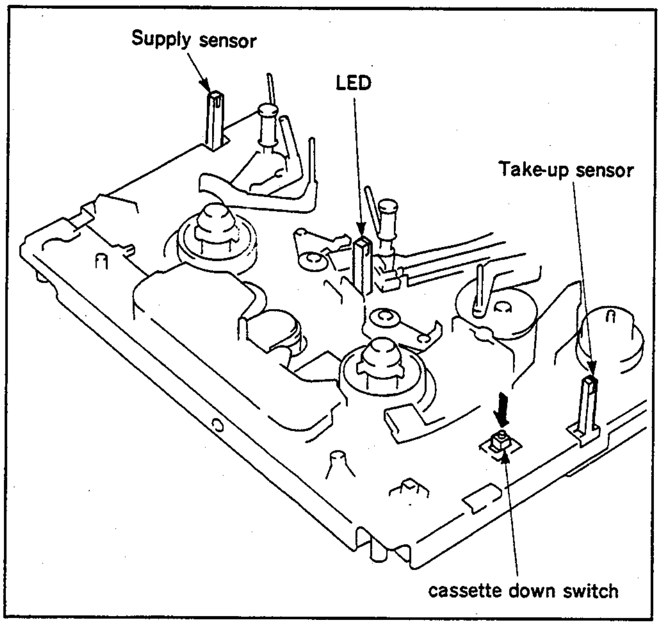


Fig. 1-3.

2. PERIODICAL INSPECTION AND REPLACEMENT

We recommend performing the following periodical inspections and maintenance in order to ensure that the unit operates in top condition and offers full performance, as well as realizes a long life of the mechanism and tapes.

* Be sure to perform the following maintenance procedures after the unit is repaired (regardless how long the unit has been used.)

2-1. CLEANING THE ROTARY HEAD DISC ASS'Y

1) Press Attach a deer skin cloth (Jig. Ref. No. J-7) soaked in cleaning solution (Jig. Ref. No. J-5) lightly to the rotary drum ass'y, then turn the rotary head disc slowly by hand to clean the surface of the rotary drum ass'y. (At this time, do not turn on the power motor to rotate the rotary head disc for cleaning.)
2) Also, do not wipe the drum ass'y by moving the deer skin cloth vertically across the head as this could damage of the tip of the head.

2-2. CLEANING THE TAPE TRANSPORT SYSTEM

1) Clean the tape transport surfaces (tape guide, a drum ass'y surfaces, capstan, pinch roller, etc.) with a deer skin cloth soaked in an approved in the recommended cleaning solution.

2-3. CLEANING THE DRIVE SYSTEM

1) Wipe the drive mechanism with an ordinary cloth soaked in an approved cleaning solution.

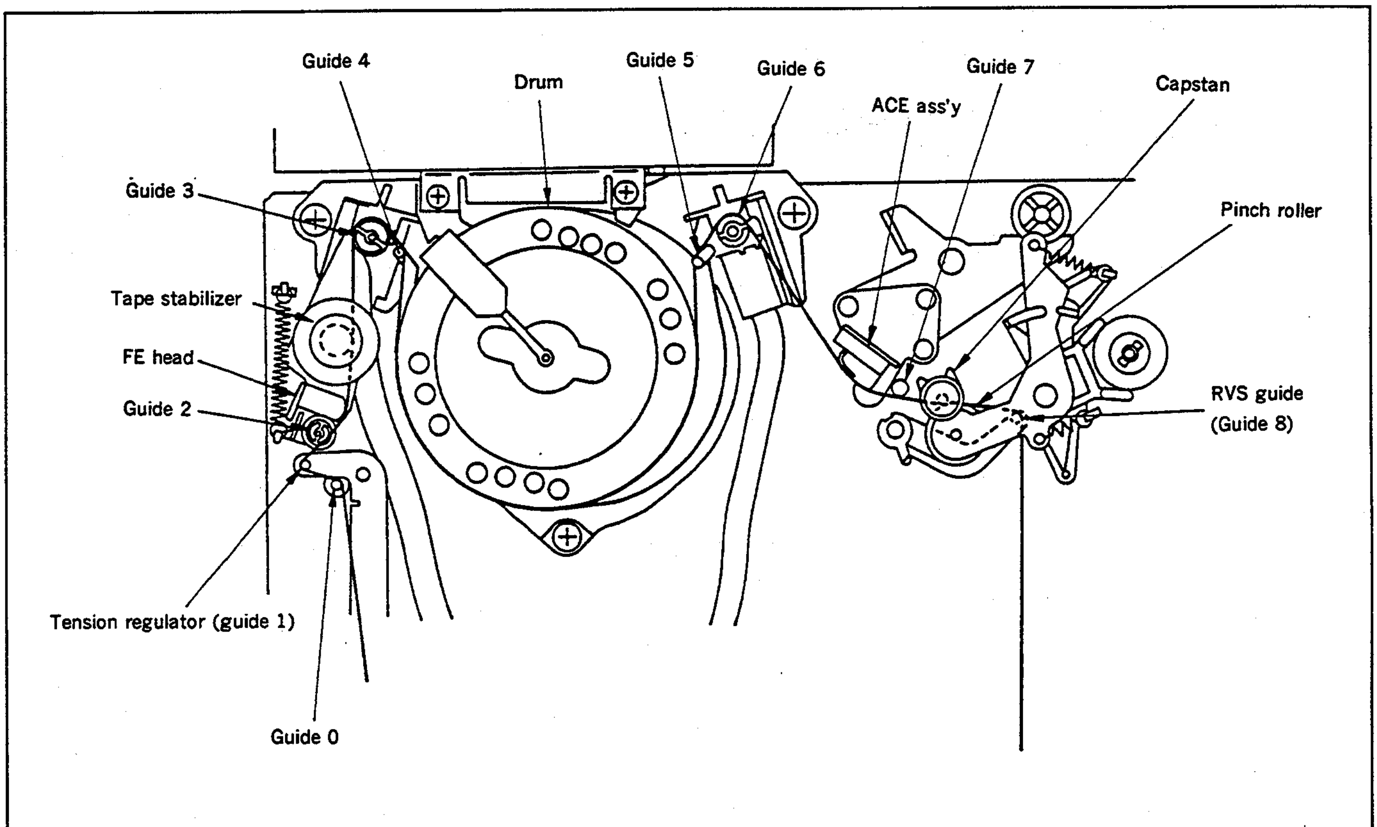

Guide 4
Drum
Guide 5
Guide 6
Guide 7
ACE ass'y
Capstan
Guide 3
Pinch roller
Tape stabilizer
FE head
Guide 2
RVS guide
(Guide 8)
Tension regulator (guide 1)
Guide 0

Fig. 2-1.

2-4. PERIODIC MAINTENANCE

Location of Maintenance and Check		User Hours Replacement Part No.	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	Remarks
Performance Check	Clean tape running surfaces	——	○	○	○	○	○	○	○	○	○	○	Always perform after repair.
	Clean, degauss ACE ass'y	——	○	○	○	○	○	○	○	○	○	○	
	Clean, degauss video disc ass'y	——	○	○	○	○	○	○	○	○	○	○	Head life is greatly affected by environment and method of use.
Driving System	Reel belt	3-736-013-01	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Always perform after repair.
Tape Running System	Abnormal noise	——	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust or replace source of abnormal noise.
	Back tension measurement	——	–	☆	–	☆	–	☆	–	☆	–	☆	Check according to 4-1-1. Spec: 24 — 34g/cm (Measured with torque cassette)
	Brake system check	——	–	☆	–	☆	–	☆	–	☆	–	☆	
	REC/PB function check	——	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Always perform after repair.
	Forward torque measurement		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Spec: 80 — 140 g·cm

○ Cleaning ☆ Check

Note: Refer to the above items for part replacement when performing an overhaul.

2-5. SERVICE TOOLS AND JIGS

Ref. No.	Description	Part No.	Printing on jig	Remarks
J-1	Master plane	H-7099-279-H		
J-2	Reel disc height jig	H-7099-038-H		
J-3	Torque gauge adapter	H-7099-035-H		
J-4	Torque gauge	H-7099-039-H		
J-5	0.93mm Allen wrench	H-7099-202-H		
J-6	NTSC torque cassette VHT-063S PAL torque cassette	J-6082-011-A J-6082-066-A		For rewind torque and back tension
	NTSC torque cassette VHT-404S PAL torque cassette	J-6082-012-A J-6082-067-A		For cue/review
J-7	NTSC alignment tape JVC-MH-1 PAL alignment tape JVC-MH-2	H-7099-046-H H-7099-052-H		
	NTSC Hi-Fi alignment tape PAL Hi-Fi alignment tape	H-7099-153-H H-7099-175-H		
J-8	Cleaning fluid	Y-2031-001-0	—	
J-9	Chamois cloth	2-034-697-00	—	Cleaning
J-10	Head degausser	Widely available	—	Video, audio head degaussing
J-11	Small adjustment mirror (with handle) Small adjustment mirror (mirror only)	J-6080-029-A J-6080-030-1	SL-5052	For tape path and tape running adjustment and check

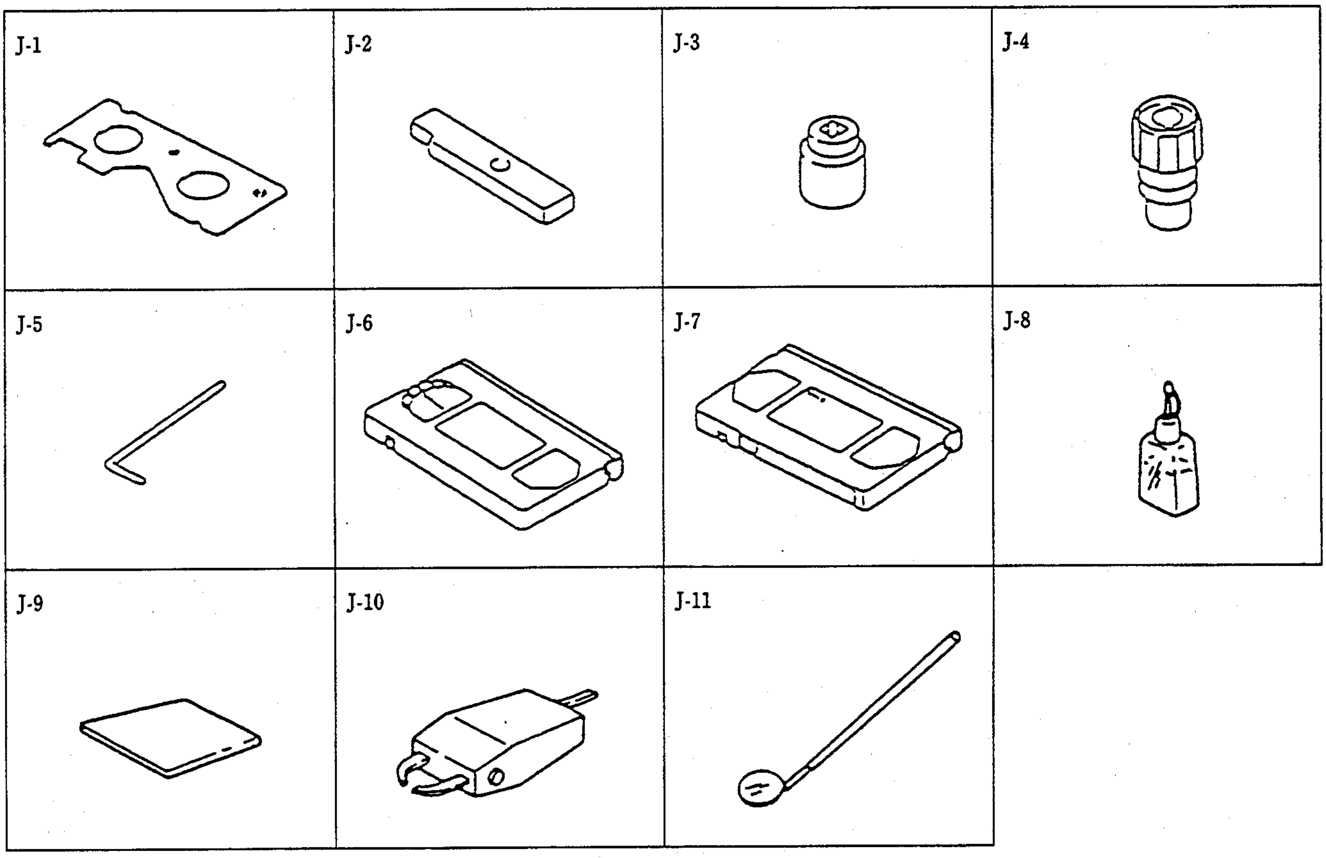


Fig. 2-2. Service tools and jigs

3. REPLACEMENT OF MAJOR COMPONENT PARTS OF THE DECK MECHANISM

Note:
- ○ Refer to "Replacement Method" in the Service Guide for replacing the cabinet and PC boards.
- ○ When mounting parts, reverse the replacement procedure while referring to "Precautions on Mounting Parts".
- ○ After grease coated parts such as gears are replaced, re-grease the replaced part.
- ○ Do not touch the guides (taped surface) and brake shoe directly with your fingers or grease them, etc.
- ○ Gears must be mounted so that they mesh with each other.

3-1. FL MECHANISM

3-1-1. FL door (Fig. 3-1.)

1) Press the claw ❶ in the direction of arrow Ⓐ, then remove the FL door ❷ in the direction of arrow Ⓑ.

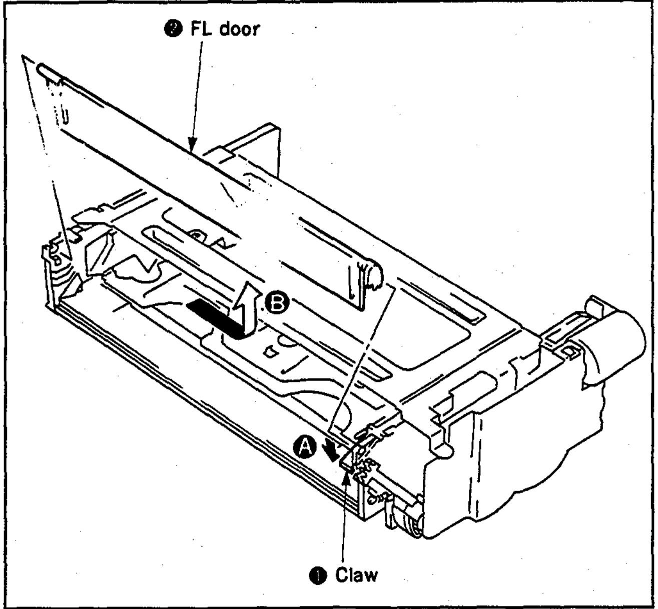

❷ FL door
Ⓑ
Ⓐ
❶ Claw

Fig. 3-1.

3-1-2. Erasure protection lever (Fig. 3-2)

1) Remove the spring ❶.
2) Disengage the claw ❷, then slide the erasure protection lever ❸ in the direction of arrow Ⓐ.
3) Disengage the erasure protection lever ❸ in the direction of arrow Ⓑ.

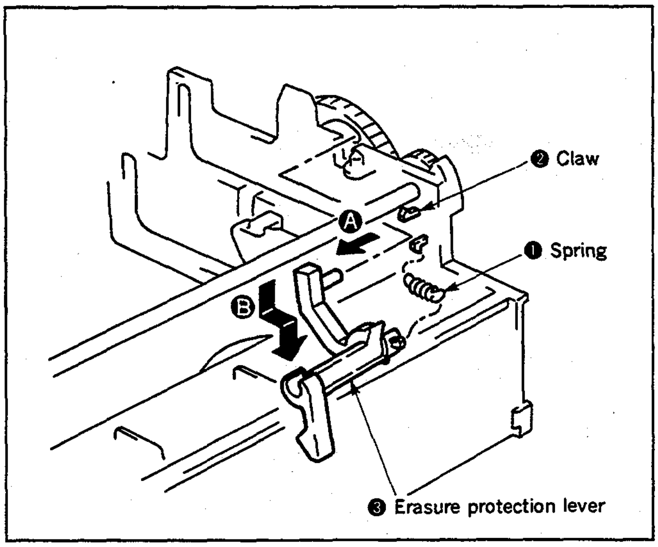

❷ Claw
Ⓐ
❶ Spring
Ⓑ
❸ Erasure protection lever

Fig. 3-2.

3-1-3. Gear cover ass'y (Fig. 3-3)

1) Disengage the four claws ❶, then remove the gear cover ass'y ❷.

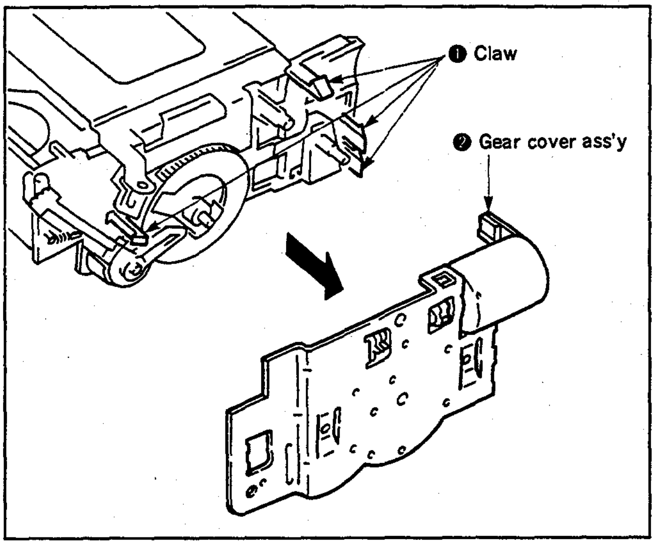

❶ Claw
❷ Gear cover ass'y

Fig. 3-3.

3-1-4. Loading motor, worm gear (FL), worm wheel (FL), worm bearing (Fig. 3-4)

1) Remove washer 3 ❶, then pull out the worm wheel (FL) ❷.
2) Remove the two screws ❸, then remove the loading motor ❹.
3) Remove the worm gear (FL) ❺ and worm bearing ❻.

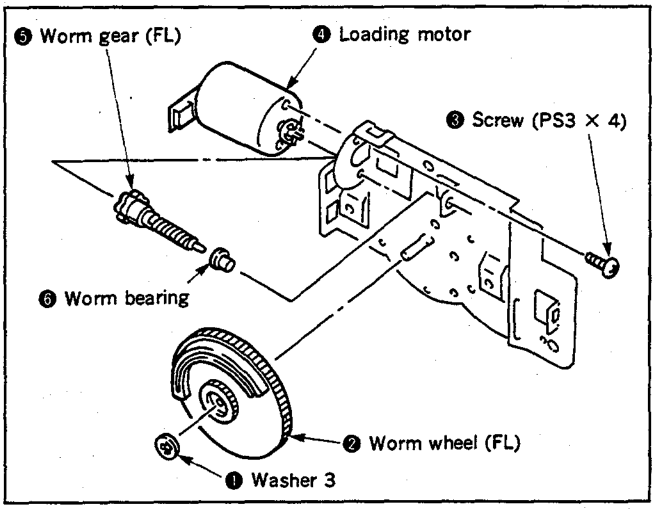

❺ Worm gear (FL)
❹ Loading motor
❸ Screw (PS3 × 4)
❻ Worm bearing
❷ Worm wheel (FL)
❶ Washer 3

Fig. 3-4.

3-1-5. Door OPEN/CLOSE arm (Fig. 3-5)

1) Remove the spring ❶.
2) Pull out the door OPEN/CLOSE arm ❷.

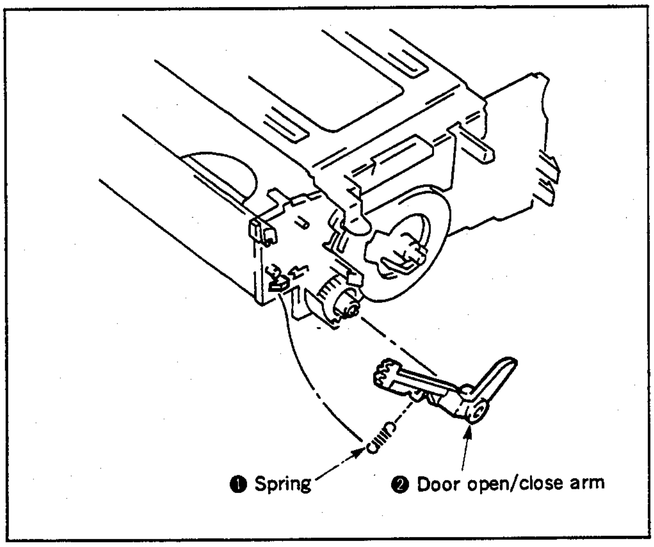

❶ Spring
❷ Door open/close arm

Fig. 3-5.

[Precautions on remounting] (Figs. 3-6 and 3-7.)

- ○ When mounting the gear cover ass'y, match up the two holes on the gear cover ass'y with the two holes on the worm wheel (FL) and then with the hole on the right drive arm ass'y.
- ○ Mesh the FL door and the door OPEN/CLOSE arm together as shown in Ⓐ section in the figure below.
- ○ The erasure protection lever shaft must fit into the groove on the left drive arm ass'y.

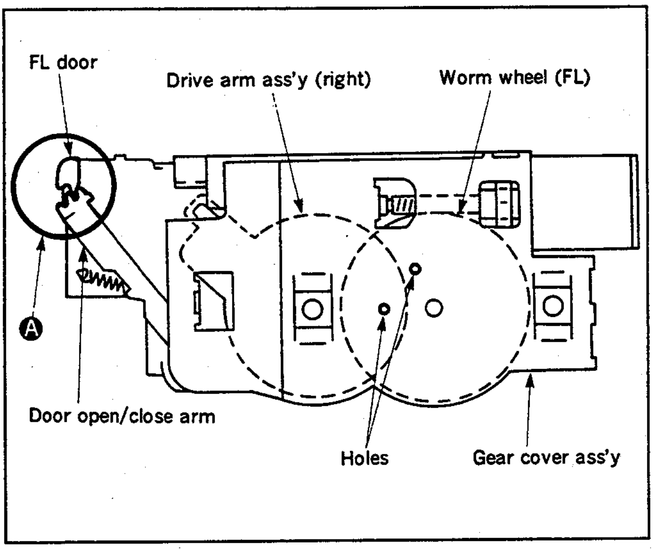

FL door
Drive arm ass'y (right)
Worm wheel (FL)
Ⓐ
Door open/close arm
Holes
Gear cover ass'y

Fig. 3-6.

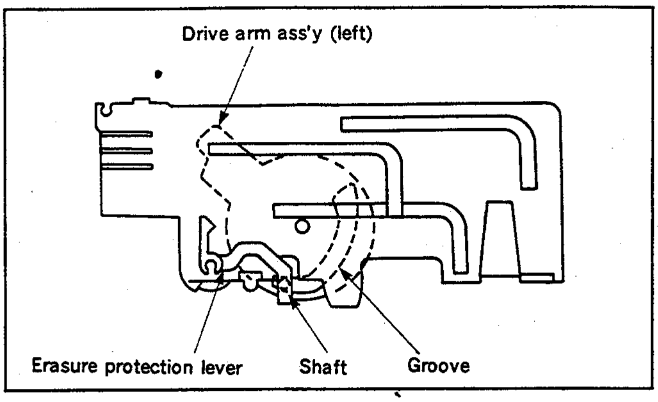

Drive arm ass'y (left)
Erasure protection lever
Shaft
Groove

Fig. 3-7.

3-2. TS ASS'Y AND GUIDE ROLLER ASS'Y No. 2 (Fig. 3-8)

1) Remove the spring ❶.
2) Remove the TS ass'y ❷ in the direction of arrow Ⓐ.
3) Turn guide roller ass'y No. 2 ❸ in the direction of arrow Ⓑ and pull it out.

[Precautions on remounting]

- ○ Clean the surface of guide roller No. 2 ❸ where the tape is attached.
- ○ Apply lubricant over the section shown in Figure A below.

[Adjustment after replacement]

- ○ Perform tape path adjustments as described in 4-1.

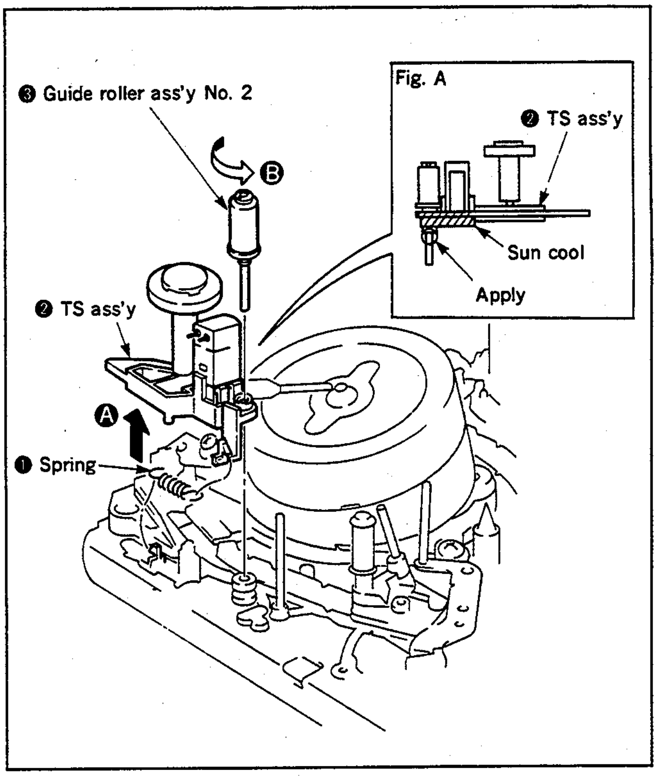

❸ Guide roller ass'y No. 2
Ⓑ
❷ TS ass'y
Ⓐ
❶ Spring
Fig. A
❷ TS ass'y
Sun cool
Apply

Fig. 3-8.

3-3. ACE ASS'Y (Fig. 3-9)

1) Slide the torsion coil spring ❶ in the direction of the arrow.
2) Remove the nylon nut N3 ❷, then pull out the ACE ass'y ❸.
3) Remove the ACE adjuster screw ❹.

[Precautions on remounting]

○ Clean the surface of the ACE ass'y ❸ where the tape is attached.
○ Hook both ends of the torsion coil spring ❶ to the ass'y as shown in Figure A below.
○ Adjust the ACE adjuster screw ❹ to the height shown in Figure A.

[Adjustment after replacement]

○ Perform tape path adjustments as described in 4-1.

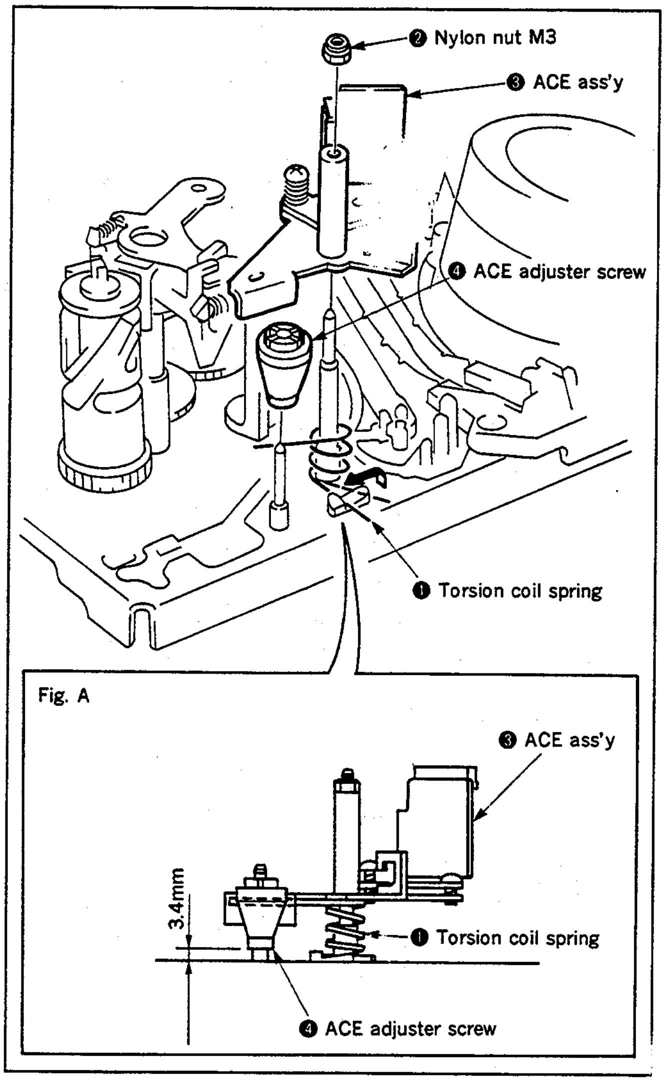

❷ Nylon nut M3
❸ ACE ass'y
❹ ACE adjuster screw
❶ Torsion coil spring
Fig. A
❸ ACE ass'y
3.4mm
❶ Torsion coil spring
❹ ACE adjuster screw

Fig. 3-9.

3-4. DRUM ASS'Y (Fig. 3-10)

1) Remove the three screws ❶, then remove the drum ass'y ❷.

[Precautions on remounting]

○ Do not touch the head tips ❸ and the ground plate ❹ directly with your fingers or tools.
○ Clean the surface of the drum ass'y ❷ where a tape is attached.
○ The stopper ❺ must be attached at the point shown in the figure below.
○ Screws must be fastened with a 6kg•cm (±1kg•cm) screw fastening torque. (The screws can be mounted in any order.)

[Adjustment after replacement]

○ Perform tape path adjustments as described in 4-1.

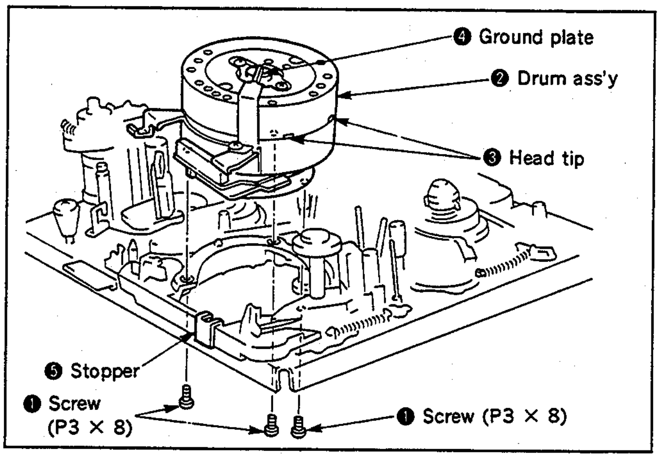

❹ Ground plate
❷ Drum ass'y
❸ Head tip
❺ Stopper
❶ Screw (P3 × 8)
❶ Screw (P3 × 8)

Fig. 3-10.

3-5. DRUM BASE ASS'Y (Fig. 3-11)

1) Remove the drum. (Refer to 3-4.)
2) Remove the three screws ❶, then remove the drum base ass'y ❷.

[Precautions on remounting]

○ The spacer ❸ for the drum base must be mounted in its previous position as shown in the figure below. (Note that some units do not feature the spacer ❸.)
○ Fastening torque must be 10kg•cm (±1kg•cm)
○ The screws must be mounted in order of (a),(b) and (c).

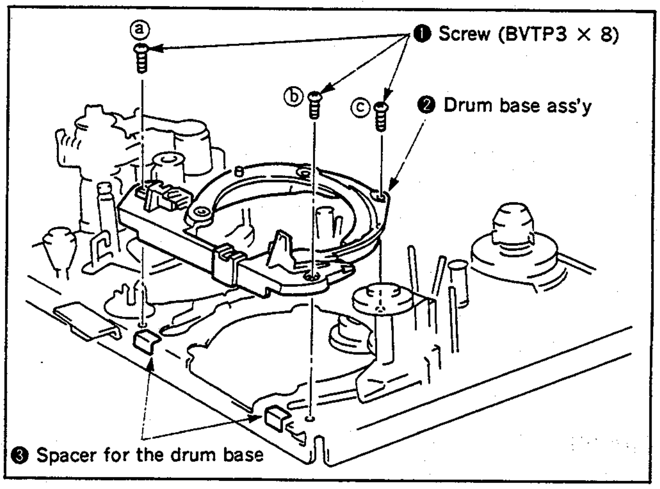

ⓐ
ⓑ
ⓒ
❶ Screw (BVTP3 × 8)
❷ Drum base ass'y
❸ Spacer for the drum base

Fig. 3-11.

3-6. PINCH ROLLER ASS'Y AND ELEVATOR CAM (Fig. 3-12)

1) Remove the two claws ❶, then pull out the stopper ❷.
2) Pull out the pinch roller ass'y ❸.
3) Pull out the elevator cam ❹.

[Precautions on remounting]

- ○ Clean the surface of the pinch roller ass'y ❸ where the tape is attached.
- ○ Match up the ▯ marks on the elevator cam ❹ and cam gear, press ❺.

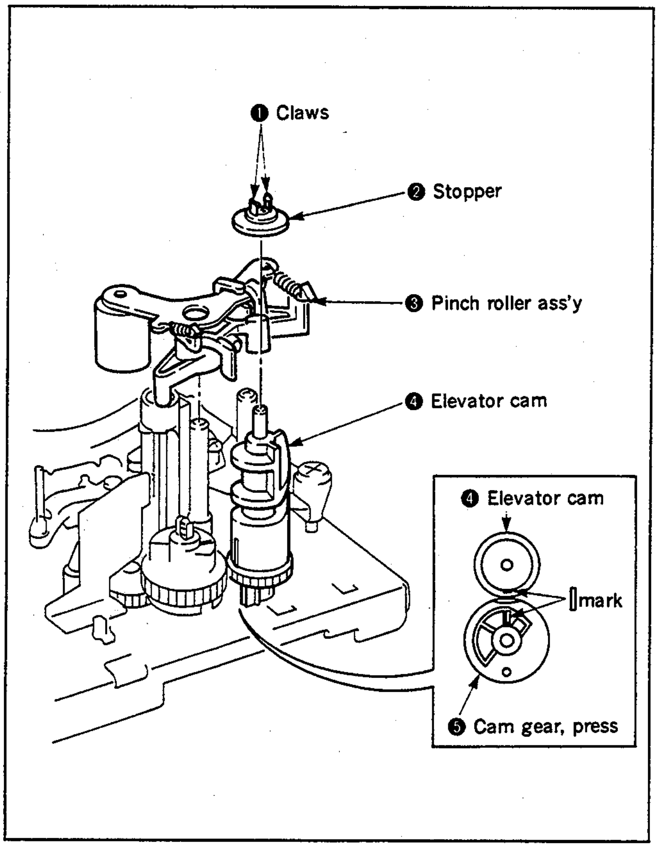

❶ Claws
❷ Stopper
❸ Pinch roller ass'y
❹ Elevator cam
❹ Elevator cam
▯mark
❺ Cam gear, press

Fig. 3-12.

3-7. CAM GEAR, PRESS AND TRANSMISSION GEAR (Fig. 3-13)

1) Remove the pinch roller ass'y. (Refer to 3-6.)
2) Remove the screw ❶, then remove the lid release plate ❷.
3) Remove the two claws ❸, then pull out the cam gear, press ❹.
4) Remove the washer 2 ❺, then pull out the transmission gear ❻.

[Precautions on remounting]

- ○ Check the top and bottom of the transmission gear ❻.
- ○ Match up the hole ❼ on the chassis with the hole ❼ on the cam gear, press ❹.
- ○ Match up the ▯ mark on the cam gear, press ❹ with the ▯ mark on the alleviator cam ❽.

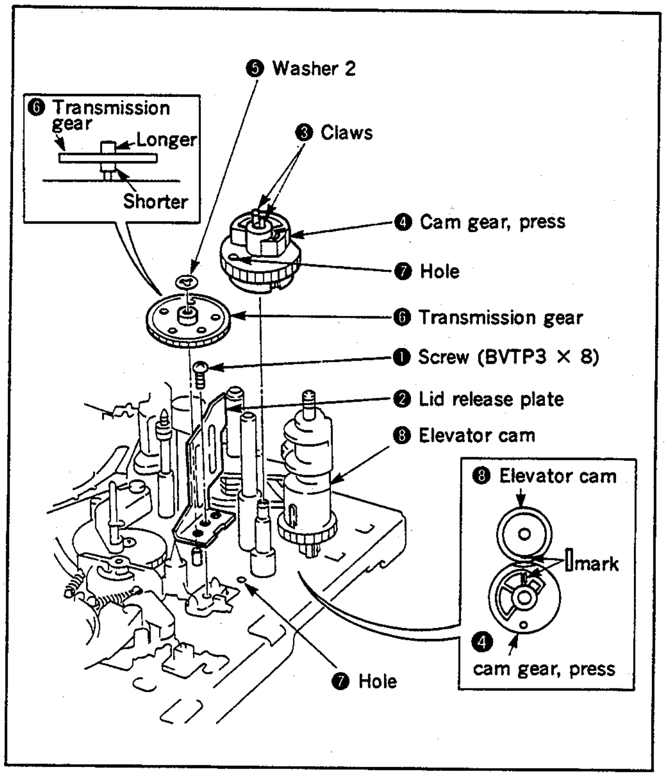

❺ Washer 2
❻ Transmission gear
Longer
Shorter
❸ Claws
❹ Cam gear, press
❼ Hole
❻ Transmission gear
❶ Screw (BVTP3 × 8)
❷ Lid release plate
❽ Elevator cam
❽ Elevator cam
▯mark
❹ cam gear, press
❼ Hole

Fig. 3-13.

3-8. RVS ARM ASS'Y AND RVS CAM GEAR (Fig. 3-14)

1) Remove the nylon nut M2 ❶ and plastic washer ❷.
2) Disengage the claw ❸, then pull out the RVS arm ass'y ❹.
3) Remove washer 2 ❺, then pull out the RVS cam gear ❻.

[Precautions on remounting]

- ○ The holes ❼ in the chassis and in the RVS cam gear ❻ must match up. Also, make sure to match up the holes ❾ on the cam gear, press ❽ and the chassis.
- ○ The spring ❿ must be hooked as shown in Fig. A below.
- ○ Clean the surface of the RVS arm ass'y ❹ where a tape is attached.
- ○ Apply 1/2 drop of lubricant to the shaft ⓫.

[Adjustment after replacement]

- ○ Perform tape path adjustments as described in 4-1.

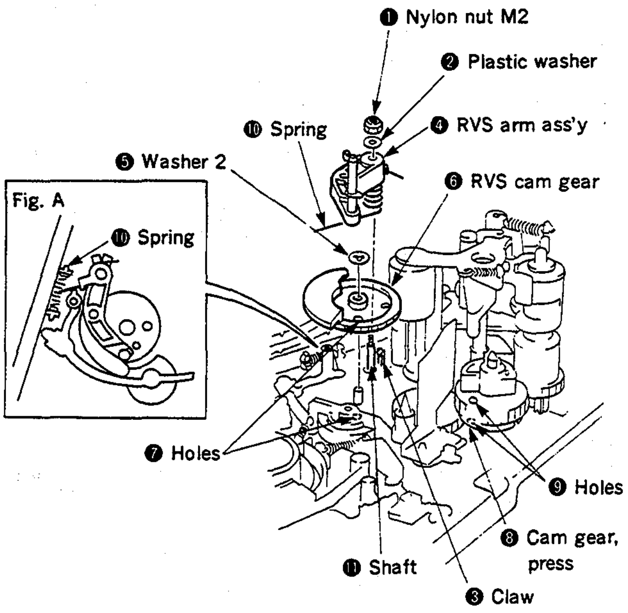

❶ Nylon nut M2
❷ Plastic washer
❿ Spring
❹ RVS arm ass'y
❺ Washer 2
❻ RVS cam gear
Fig. A
❿ Spring
❼ Holes
❾ Holes
❽ Cam gear, press
⓫ Shaft
❸ Claw

Fig. 3-14.

3-9. GUIDE No. 7 (Fig. 3-15)

1) Remove the nylon nut M3 ❶.
2) Pull out guide flange No. 7 ❷, guide sleeve No. 7 ❸, guide flange No. 7 ❹ and compression coil spring ❺ in the given order.

[Precautions on remounting]

- ○ Clean the surface of the guide sleeve No. 7 ❸ where the tape is attached.
- ○ Adjust the height of guide No. 7 to the height shown in Fig. A below.

[Adjustment after replacement]

- ○ Perform tape path adjustments as described in 4-1.

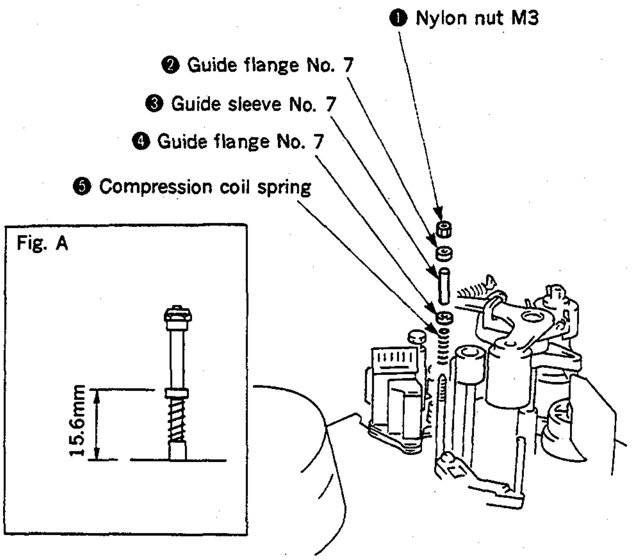

❶ Nylon nut M3
❷ Guide flange No. 7
❸ Guide sleeve No. 7
❹ Guide flange No. 7
❺ Compression coil spring
Fig. A
15.6mm

Fig. 3-15.

3-10. S-BRAKE ASS'Y, T-BRAKE ASS'Y (Fig. 3-16)

1) Remove the spring ❶.
2) Disengage the claw ❷, then pull out the S-brake ass'y ❸.
3) Disengage the claw ❹, then pull out the T-brake ass'y ❺.

[Precautions on remounting]

- Do not touch the brake shoes for the respective S-brake ❸ and T-brake ❺ assy's directly with your fingers.
- Do not hold on to the S-brake ❸ and T-brake ❺ assy's by the arms when inserting them.
- The T-brake ass'y ❺ must be positioned above the S-brake ass'y ❸ as shown in Fig. A below.

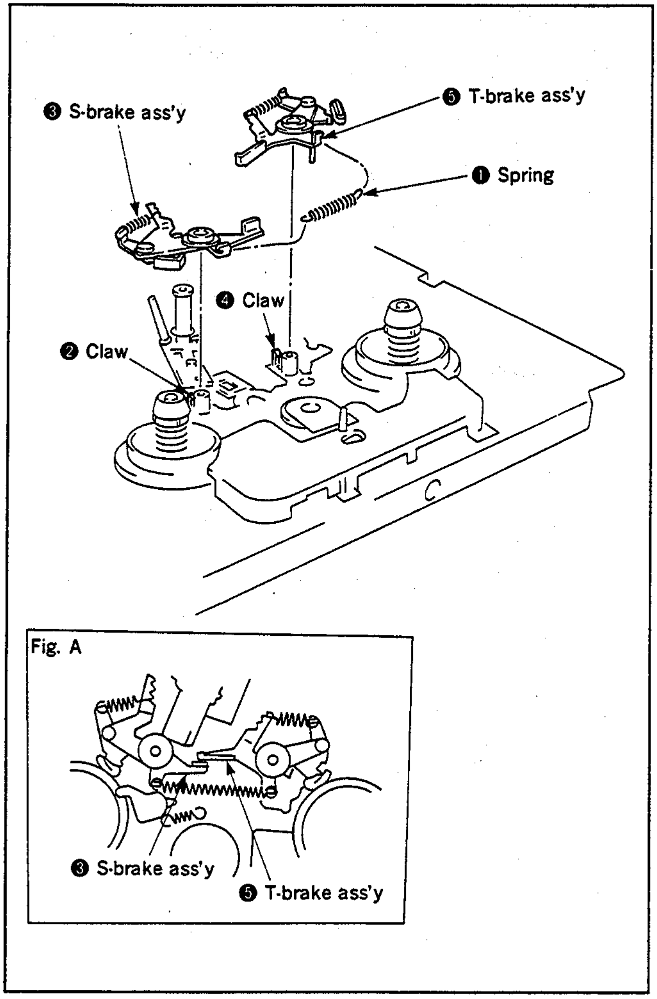

❸ S-brake ass'y
❺ T-brake ass'y
❶ Spring
❹ Claw
❷ Claw
Fig. A
❸ S-brake ass'y
❺ T-brake ass'y

Fig. 3-16.

3-11. T-SOFT BRAKE ASS'Y REV BRAKE ARM (Fig. 3-17)

1) Remove the end of the spring ❶ from the REV brake arm ❷.
2) Remove the end of the spring ❸ from the chassis.
3) Disengage the claw ❹, then pull out the T-soft brake ass'y ❺.
4) Disengage the claw ❻, then pull out the REV brake arm ❷.

[Precautions on remounting]

- Do not touch the brake shoe of the T-soft brake ass'y ❺ directly with your fingers.

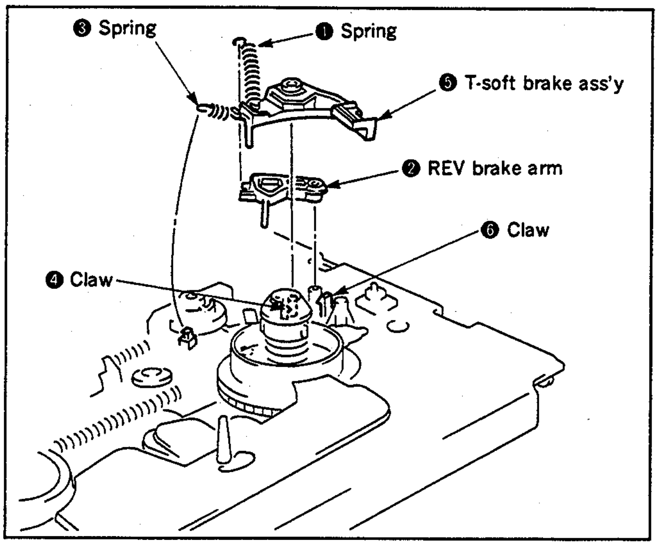

❸ Spring
❶ Spring
❺ T-soft brake ass'y
❷ REV brake arm
❻ Claw
❹ Claw

Fig. 3-17.

3-12. S-SOFT BRAKE ARM ASS'Y (Fig. 3-18)

1) Unhook the end of the spring ❶ from the chassis.
2) Disengage the claw ❷, then pull out the S-soft brake arm ass'y ❸.

[Precautions on remounting]

- The S-soft brake arm ass'y must not clamp down the tension regulator band ass'y ❹ nor be positioned below the tension regulator band ❹.

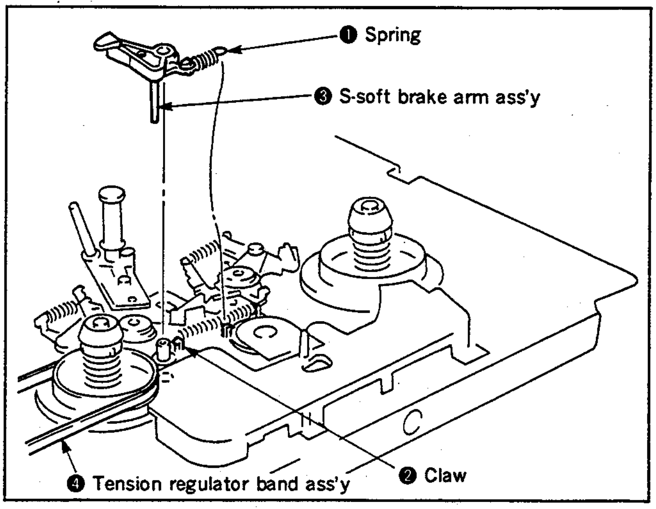

❶ Spring
❸ S-soft brake arm ass'y
❹ Tension regulator band ass'y
❷ Claw

Fig. 3-18.

3-13. S-GUIDE AND T-GUIDE ROLLER ASSY'S (Fig. 3-19)

1) Loosen the setscrew ❶, then remove the S-guide roller ass'y ❷ by turning it in the direction of the arrow Ⓐ.
2) Loosen the setscrew ❸, then remove the T-guide roller ass'y ❹ by turning it in the direction of arrow Ⓑ.

[Precautions on remounting]

○ Clean the surfaces of the S-guide roller ❷ and T-guide roller assy's ❹ where a tape is attached.

[Adjustment after replacement]

○ Perform tape path adjustments as described in 4-1.

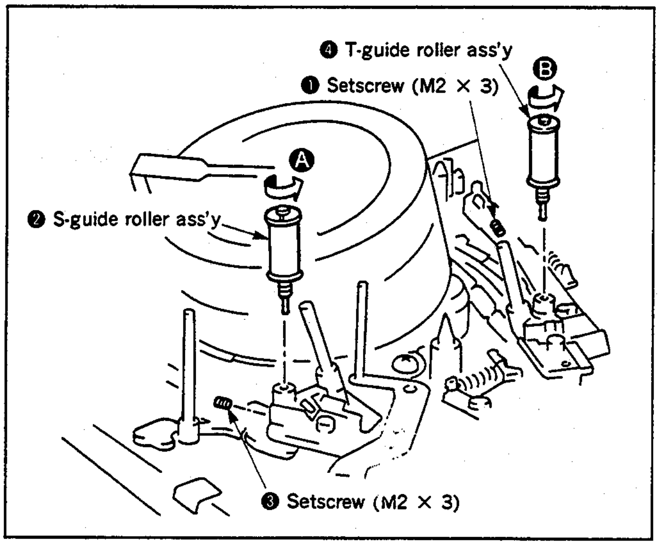

❹ T-guide roller ass'y
❶ Setscrew (M2 × 3)
Ⓑ
Ⓐ
❷ S-guide roller ass'y
❸ Setscrew (M2 × 3)

Fig. 3-19.

3-14. REEL LOCK RELEASE AND REW GEAR (Fig. 3-20)

1) Disengage the two claws ❶, then remove the reel lock release ❷ along with the spring ❸ (while the spring is still attached).
2) Next, pull out the REW gear ❹ with the spring bearing ❺ still attached).

[Precautions on remounting]

○ Make sure that the small thrust bearing ❻ remains attached.

○ Make sure that the two claws ❶ lock the real lock release ❷ in place.

○ Apply 1/2 drop of lubricant to the shaft ❼.

○ Make sure that the spring ❸ adheres to the reel lock release ❷ and that it fits inside the rib of the REW gear ❹.

○ Mount the REW gear ❹ by meshing it with gear ❽.

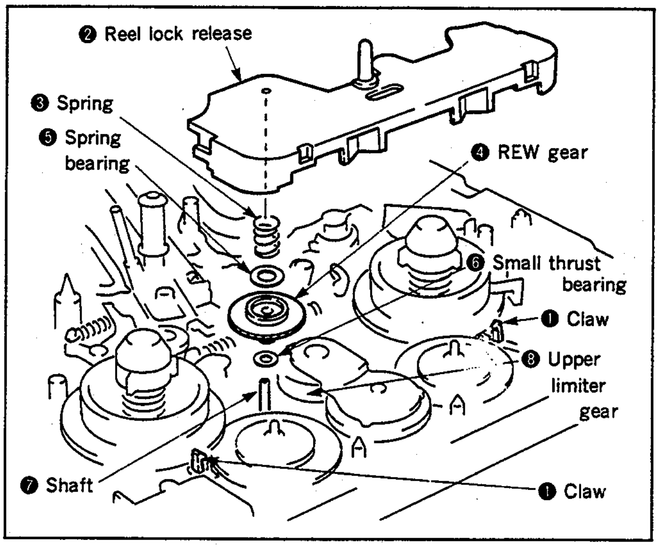

❷ Reel lock release
❸ Spring
❺ Spring bearing
❹ REW gear
❻ Small thrust bearing
❶ Claw
❽ Upper limiter gear
❼ Shaft
❶ Claw

Fig. 3-20.

3-15. TENSION REGULATOR ARM ASS'Y, TENSION REGULATOR BAND ASS'Y (Fig. 3-21)

1) Remove the reel lock release ass'y. (Refer to Fig. 3-14.)
2) Disengage the three claws marked ❶ and the claw marked ❷, then remove the tension regulator band ass'y ❸.
3) Unhook the end of the spring ❹ from the chassis.
4) Disengage the claw ❺, then pull out the tension regulator arm ass'y ❻.

[Precautions on remounting]

- ○ Roll up the tension regulator band ❸ on the S-reel by turning the S-soft brake arm ass'y ❼ in the direction of the arrow.
- ○ Hook the spring ❹ at the center of the spring hook ❽.
- ○ Do not touch the brake shoe of the tension regulator band ass'y ❸ directly with your fingers.
- ○ Mount the tension regulator arm ass'y ❻ at the position shown in Fig. A below.

[Adjustment after replacement]

- ○ Check the back tension. (Refer to 4-1-1.)
- ○ Perform tape path adjustments as described in 4-1.

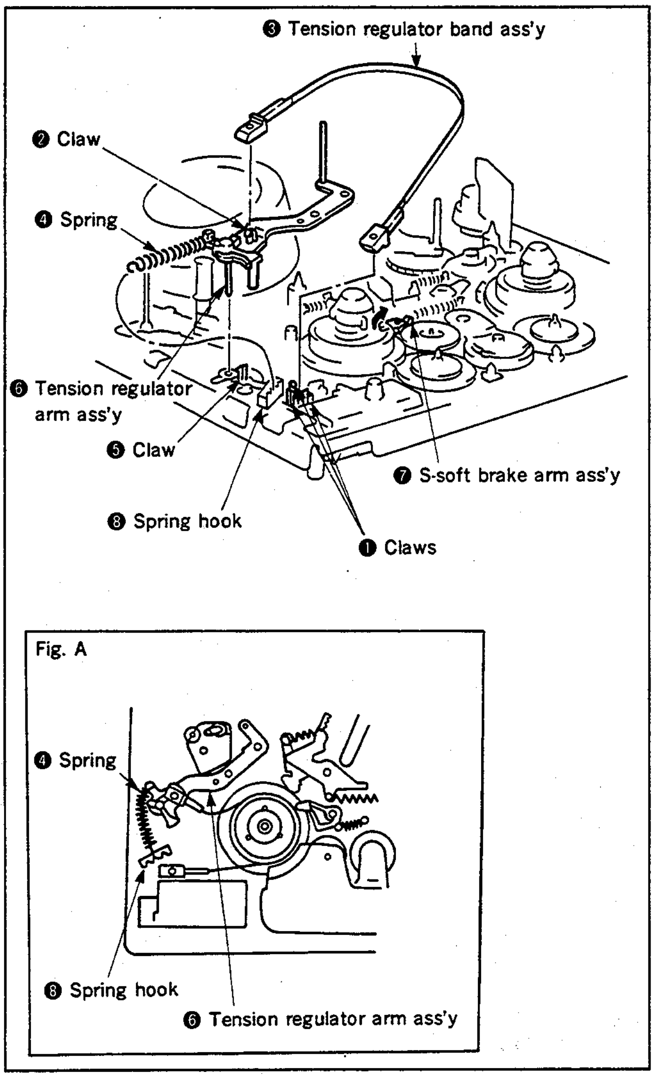

❸ Tension regulator band ass'y
❷ Claw
❹ Spring
❻ Tension regulator arm ass'y
❺ Claw
❼ S-soft brake arm ass'y
❽ Spring hook
❶ Claws
Fig. A
❹ Spring
❽ Spring hook
❻ Tension regulator arm ass'y

Fig. 3-21.

3-16. S TAKE-UP ASS'Y (Fig. 3-22)

1) Remove the tension regulator arm ass'y and the tension regulator band ass'y. (Refer to 3-15.)
2) Unhook the end of the spring ❶ from the S take-up arm ❷.
3) Disengage the two claws ❸, then remove the S take-up ass'y ❹.

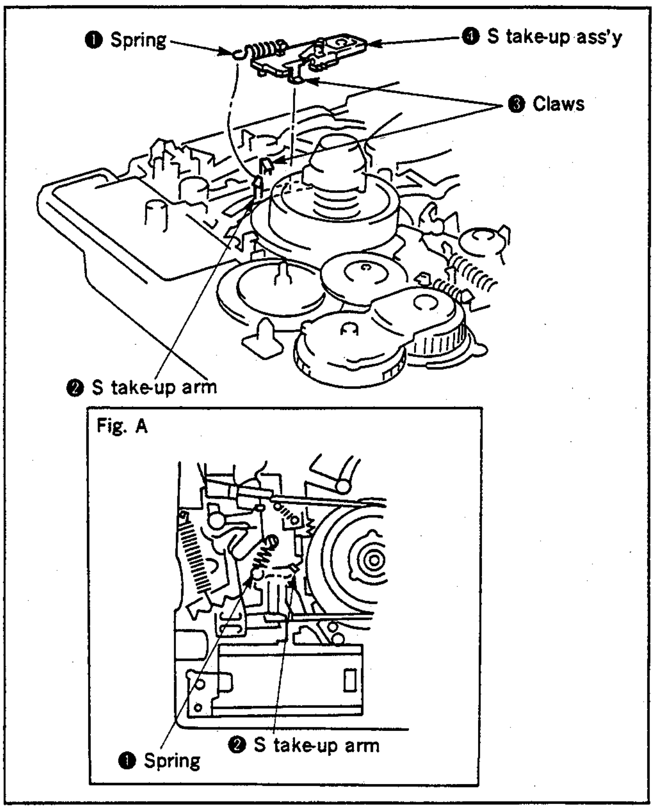

❶ Spring
❹ S take-up ass'y
❸ Claws
❷ S take-up arm
Fig. A
❶ Spring
❷ S take-up arm

Fig. 3-22.

3-17. S-REEL ASS'Y (Fig. 3-23)

1) Remove the S-soft brake arm ass'y. (Refer to 3-12.)
2) Remove the reel lock release. (Refer to 3-14.)
3) Remove the tension regulator band ass'y. (Refer to 3- 15.)
4) Turn the S-brake ass'y ❶ in the direction of the arrow.
5) Pull out the S-reel ass'y ❷.

[Precautions on remounting]

- ○ At least one reel stand thrust bearing ❸ must be attached (but not more than two).
- ○ Do not touch the outer edge of the S-reel ass'y ❷ directly with your fingers.
- ○ Apply 1/2 drop of lubricant over the shaft ❹.
- ○ Mount the S-reel ass'y ❷ while meshing it with the relay gear ❺.

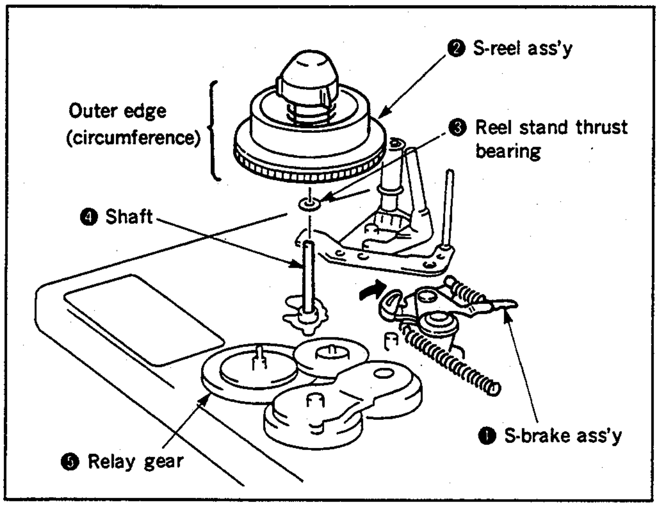

❷ S-reel ass'y
Outer edge (circumference)
❸ Reel stand thrust bearing
❹ Shaft
❶ S-brake ass'y
❺ Relay gear

Fig. 3-23.

3-18. T-REEL ASS'Y (Fig. 3-24)

1) Remove the T-soft brake ass'y. (Refer to 3-11.)
2) Remove the reel lock release ass'y. (Refer to 3-14.)
3) Turn the T-brake ass'y ❶ in the direction of the arrow.
4) Pull out the T-reel ass'y ❷.

[Precautions on remounting]

- ○ At least one reel stand thrust bearing ❸ must be attached (but not more than two).
- ○ Do not touch the outer edge of the T-reel ass'y ❷ directly with your fingers.
- ○ Apply 1/2 drop of lubricant on the shaft ❹.
- ○ Mount the T-reel ass'y ❷ while meshing it with the relay gear ❺.

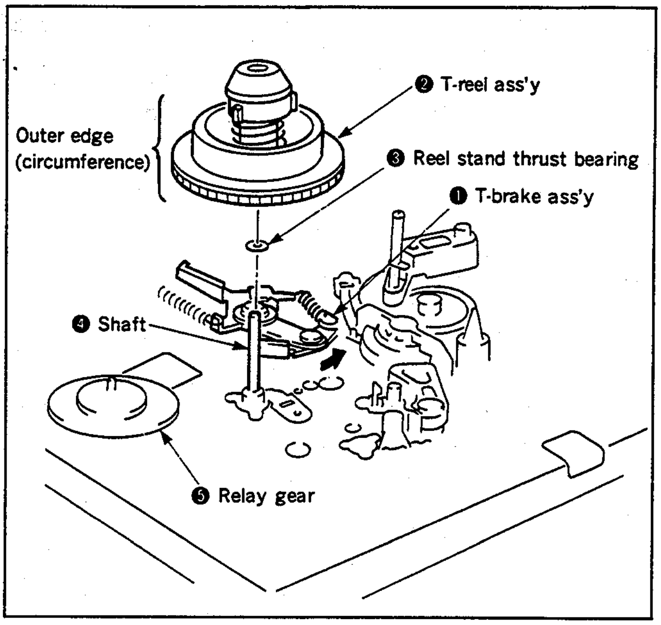

❷ T-reel ass'y
Outer edge (circumference)
❸ Reel stand thrust bearing
❶ T-brake ass'y
❹ Shaft
❺ Relay gear

Fig. 3-24.

3-19. PENDULUM ARM ASS'Y (Fig. 3-25)

1) Remove the reel lock release ass'y. (Refer to 3-14.)
2) Remove the washer 2 ❶, then pull out the pendulum arm ass'y ❷.

[Precautions on remounting]

- ○ Fit the boss on the pendulum cap ❸ into the gap in the pendulum slide plate ❹.
- ○ The plastic slider ❺ must be attzched.
- ○ Apply 1/2 drop of lubricant on the shaft ❻.
- ○ Mount the pendulum arm ass'y ❷ by meshing it with the upper limiter gear ❼.

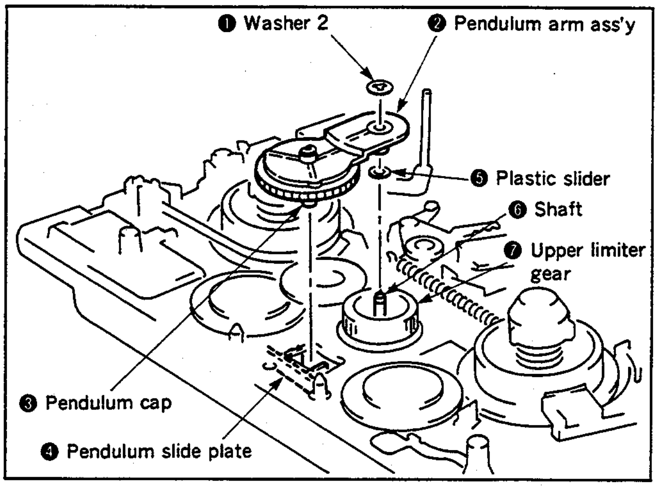

❶ Washer 2
❷ Pendulum arm ass'y
❺ Plastic slider
❻ Shaft
❼ Upper limiter gear
❸ Pendulum cap
❹ Pendulum slide plate

Fig. 3-25.

3-20. RELAY GEAR (Fig. 3-26)

1) Remove the reel lock release and REW gear. (Refer to 3-14.)
2) Remove the S-reel ass'y. (Refer to 3-17.)
3) Remove the T-reel ass'y. (Refer to 3-18).
4) Pull out the two relay gears ❶.

[Precautions on remounting]

- ○ The relay gears ❶ must rotate smoothly after remounting.
- ○ Apply 1/2 drop of lubricant to the respective shafts ❷.

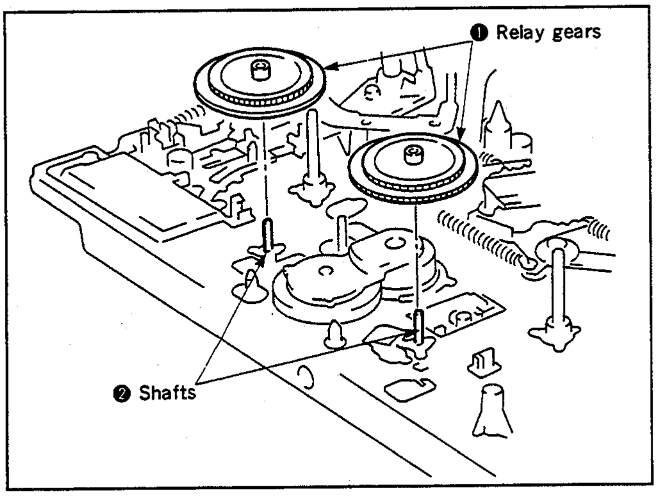

❶ Relay gears
❷ Shafts

Fig. 3-26.

3-21. ADJUSTER ARM ASS'Y (Fig. 3-27)

1) Remove screw ❶.
2) Remove washer ❻.
3) Remove the end of the spring ❷ hooked to the chassis.
4) Remove the end of the timing belt ❸ from the capstan motor arm ass'y.
5) Disengage the claw ❹, then remove the adjuster arm ass'y.

[Precautions on remounting]

- ○ First mount the adjuster arm ass'y ❺, timing belt ❸ and spring ❷, then attach the washer ❻ and fasten the screw ❶.
- ○ The screw fastening torque must be within 5kg•cm (±1kg•cm).

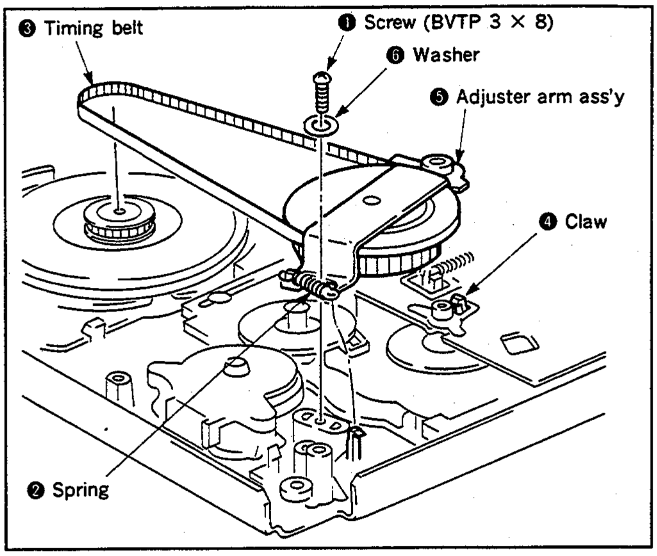

❸ Timing belt
❶ Screw (BVTP 3 × 8)
❻ Washer
❺ Adjuster arm ass'y
❹ Claw
❷ Spring

Fig. 3-27.

3-22. CAP BRAKE ASS'Y (Fig. 3-28)

1) Loosen the screw ❶, then push the timing belt ❷ in the direction of the arrow.
2) Unhook the end of the spring ❸ from the chassis.
3) Disengage claw ❹, then pull out CAP brake ass'y ❺.

[Precautions on remounting]

- ○ Do not touch the brake shoe of the CAP brake ass'y ❺ directly with your fingers.

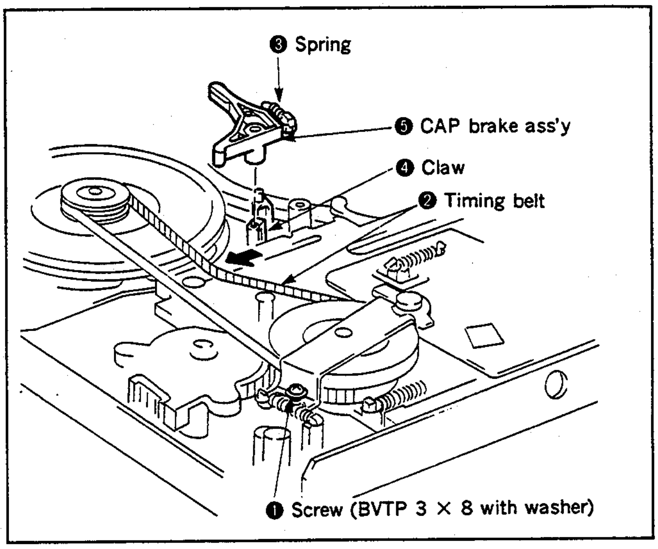

❸ Spring
❺ CAP brake ass'y
❹ Claw
❷ Timing belt
❶ Screw (BVTP 3 × 8 with washer)

Fig. 3-28.

3-23. CAPSTAN MOTOR (Fig. 3-29)

1) Turn the ACE ass'y ❶ in the direction of arrow Ⓐ as shown in Fig. A below, then remove three screws ❷.
2) Remove screw ❸, then remove the rotor clamp ❹.
3) Turn the CAP brake ass'y ❺ in the direction of arrow Ⓑ, then pull out the capstan motor ❻.

[Precautions on remounting]

- ○ Clean the section of the capstan motor ❻ where the tape is attached.
- ○ Do not touch the brake shoe of the CAP brake ass'y ❺ directly with your fingers.
- ○ Of the three screws ❷, first fasten screw A temporarily, then fasten screws B and C firmly, followed by screw A.
- ○ The screw fastening torque must be within 3kg•cm ± 1kg•cm.

[Adjustments after mounting]

- ○ Perform tape path adjustments as described in 4-1.

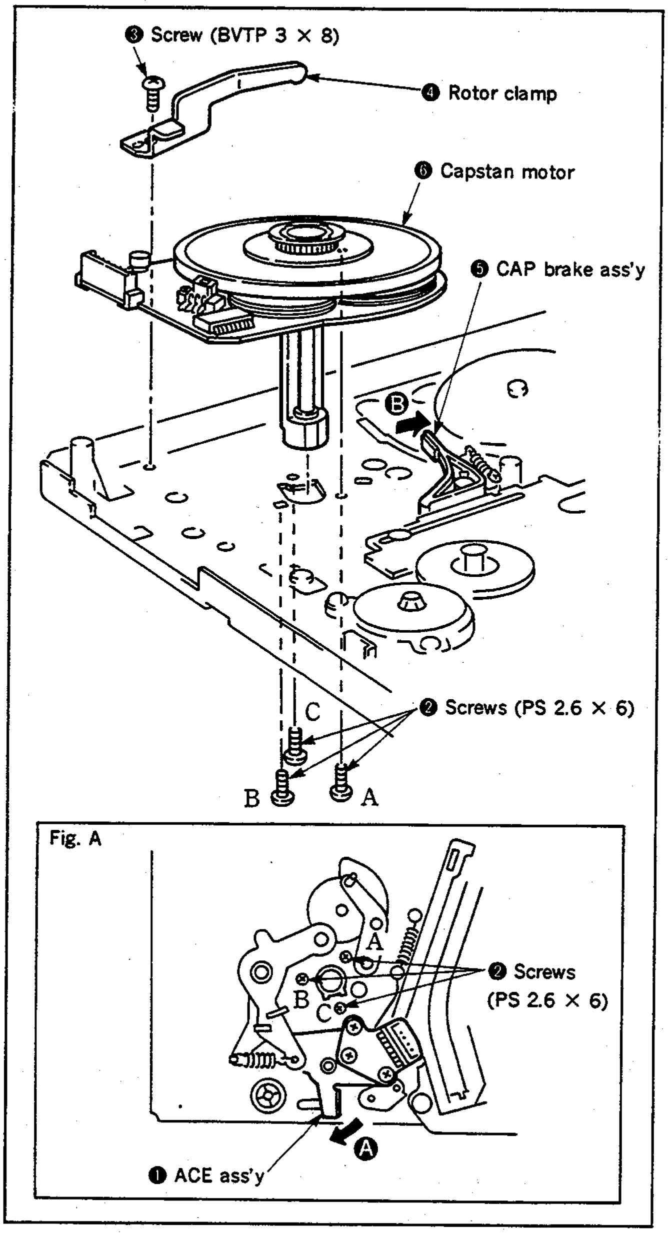

❸ Screw (BVTP 3 × 8)
❹ Rotor clamp
❻ Capstan motor
❺ CAP brake ass'y
Ⓑ
C
❷ Screws (PS 2.6 × 6)
B
A
Fig. A
A
B
C
❷ Screws
(PS 2.6 × 6)
❶ ACE ass'y
Ⓐ

Fig. 3-29.

3-24. ROTARY SWITCH (Fig. 3-30)

1) Remove the adjuster arm ass'y. (Refer to 3-21.)
2) Remove the screws ❶ and ❷, then pull out the rotary switch ❸.

[Precautions on remounting]

- ○ Match up the ● mark on the rotary switch ❸ with the ▲ mark on the RKB cam gear ❹ as shown in Fig. A.
- ○ Match up holes ❻ on the pendulum arm ❺ and the chassis.

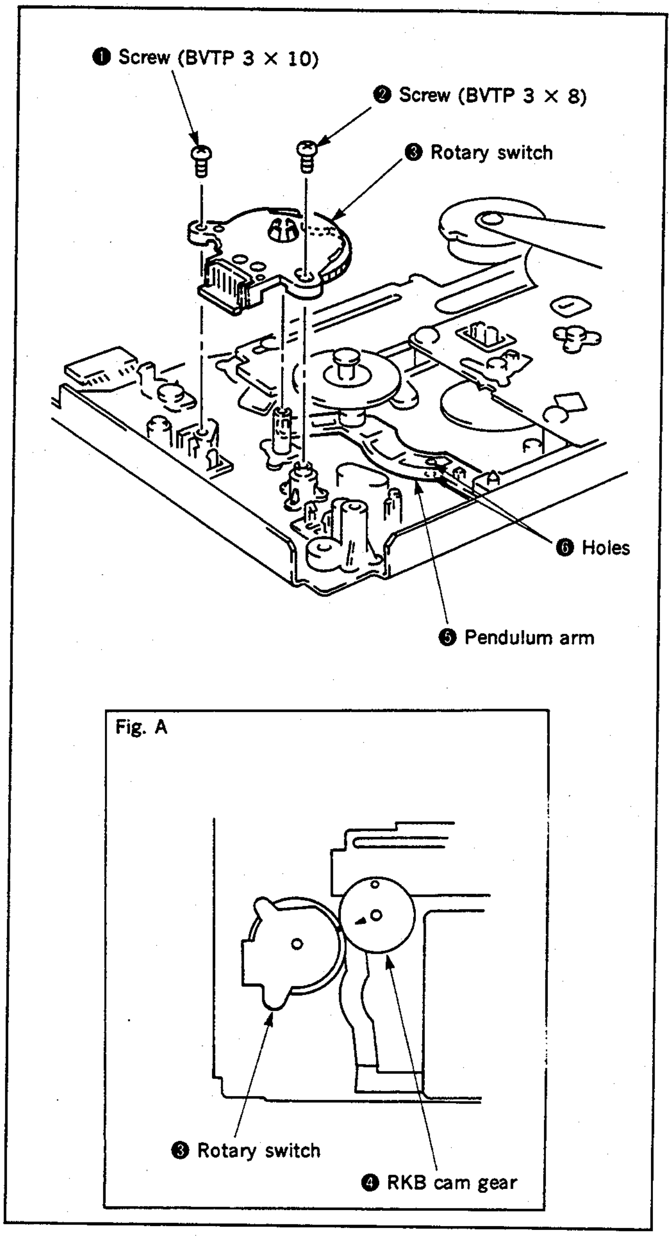

❶ Screw (BVTP 3 × 10)
❷ Screw (BVTP 3 × 8)
❸ Rotary switch
❻ Holes
❺ Pendulum arm
Fig. A
❸ Rotary switch
❹ RKB cam gear

Fig. 3-30.

3-25. RKB CAM GEAR (Fig. 3-31)

1) Remove the adjuster arm ass'y. (Refer to 3-22.)
2) Remove washer 2 ❶, then pull out the RKB cam gear ❷.

[Precautions on remounting]

- ○ When the limiter arm ❸ is pushed in the direction of the arrow, the pin must fit into the notch on the RKB cam gear ❷.
- ○ The ■ mark on rotary switch ❺ must match up with the ◀ mark on the RKB cam gear ❷ as shown in Fig. A.
- ○ Apply 1/2 drop of lubricant to shaft ❻.
- ○ Match up the holes ❹ on the RKB cam gear ❷ and the mode slide plate.

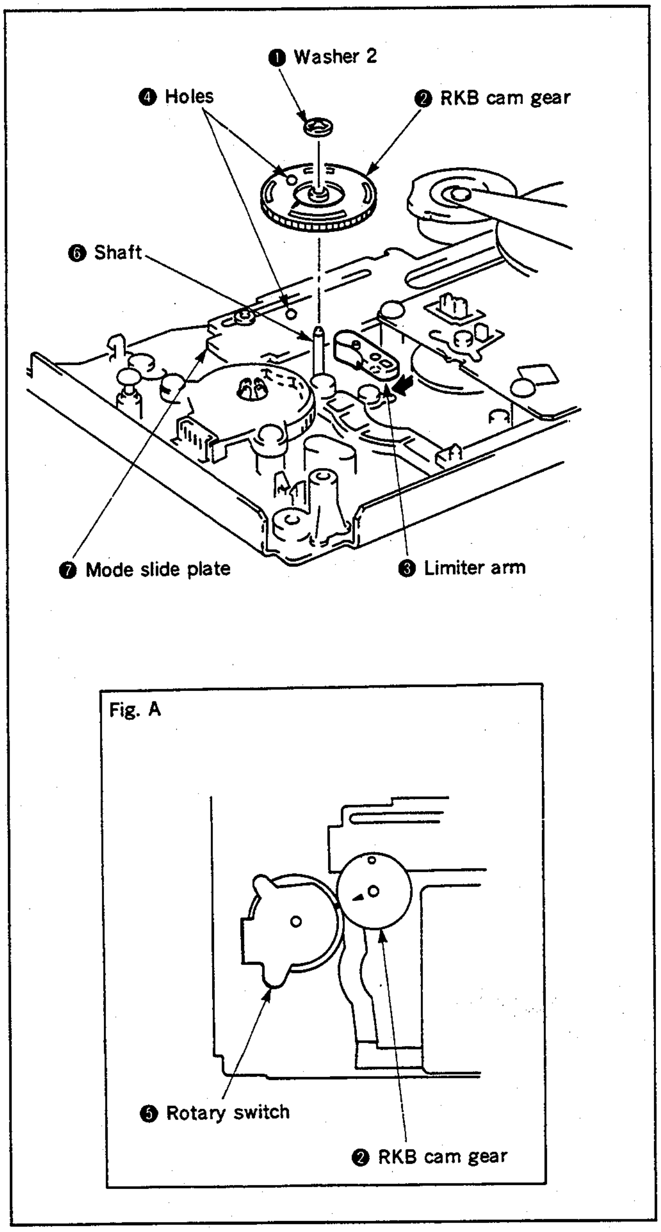

❶ Washer 2
❹ Holes
❷ RKB cam gear
❻ Shaft
❼ Mode slide plate
❸ Limiter arm
Fig. A
❺ Rotary switch
❷ RKB cam gear

Fig. 3-31.

3-26. SUB-CHASSIS ASS'Y (Fig. 3-32)

1) Remove the reel lock release arm and REW gear. (Refer to 3-15.)
2) Remove the pendulum arm ass'y. (Refer to 3-19.)
3) Remove the adjuster arm ass'y. (Refer to 3-22.)
4) Remove the three screws ❶, then remove sub-chassis ass'y ❷.

[Precautions on remounting]

- ○ The switching arm ❸ must be switched in the direction of the arrow.
- ○ The screws must be fastened in order of a, b and c.
- ○ Mount the sub-chassis carefully so as not to damage the gear.
- ○ The corner edge of the lug terminal ❹ must fit into the gap between the chassis ass'y ❷ and mechanism chassis.

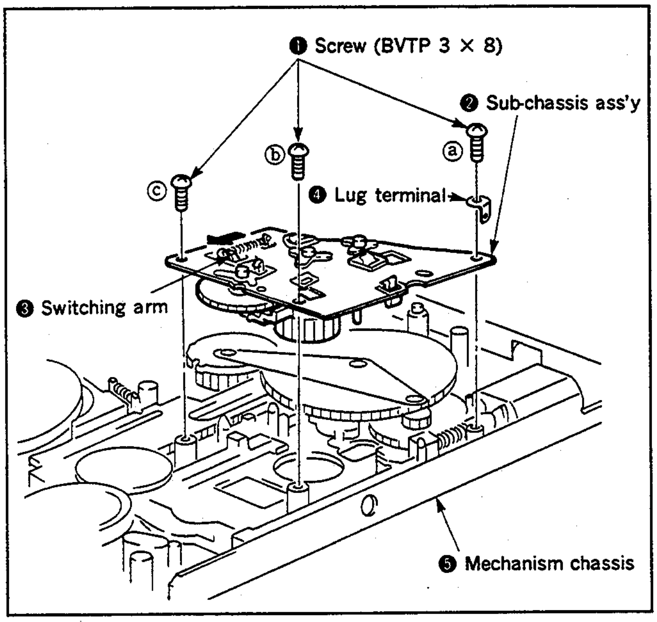

❶ Screw (BVTP 3 × 8)
❷ Sub-chassis ass'y
ⓐ
ⓑ
ⓒ
❹ Lug terminal
❸ Switching arm
❺ Mechanism chassis

Fig. 3-32.

3-27. PENDULUM SLIDE PLATE, PENDULUM ARM (Fig. 3-33)

1) Remove the rotary switch. (Refer to 3-24.)
2) Remove the RKB cam gear. (Refer to 3-25.)
3) Remove the sub-chassis ass'y. (Refer to 3-26.)
4) Disengage the two claws ❶, then pull out the pendulum slide plate ❷.
5) Unhook the spring ❸.
6) Disengage the claw ❹, then pull out pendulum arm ❺.

[Precautions on remounting]

○ The shaft ❻ must fit into hole ❼.

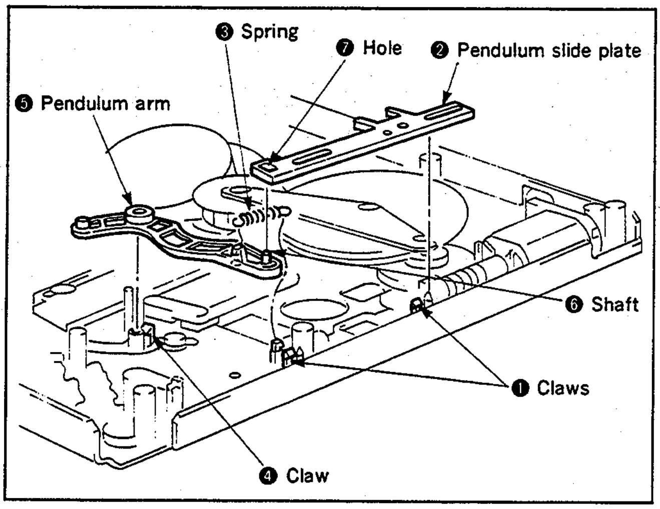

❸ Spring
❼ Hole
❷ Pendulum slide plate
❺ Pendulum arm
❻ Shaft
❶ Claws
❹ Claw

Fig. 3-33.

3-28. THE LIMITER ARM AND LIMITER SLIDE PLATE (Fig, 3-24)

1) Remove the RKB cam gear. (Refer to 3-25.)
2) Remove the sub-chassis. (Refer to Fig. 3-26.)
3) Disengage the claw ❶, then pull out the limiter arm ❷.
4) Disengage the two claws ❸, then pull out the limiter slide plate ❹.

[Precautions on remounting]

○ The shaft ❺ must fit into the hole ❻.

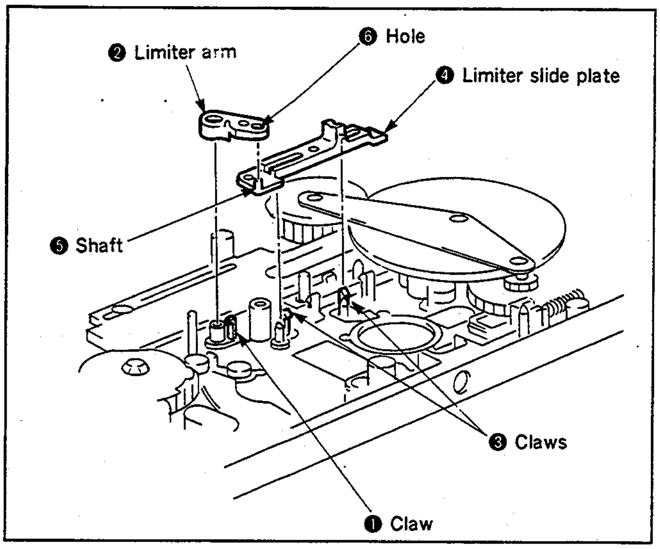

❷ Limiter arm
❻ Hole
❹ Limiter slide plate
❺ Shaft
❸ Claws
❶ Claw

Fig. 3-34.

3-29. CAM MOTOR (Fig. 3-35)

1) Remove the sub- chassis ass'y. (Refer to 3-26.)
2) Disengage the six claws ❶, then remove the cam motor ❷ and worm gear ❸.

[Precautions on remounting]

○ Check the meshing of cam motor ❷ and worm gear ❸.

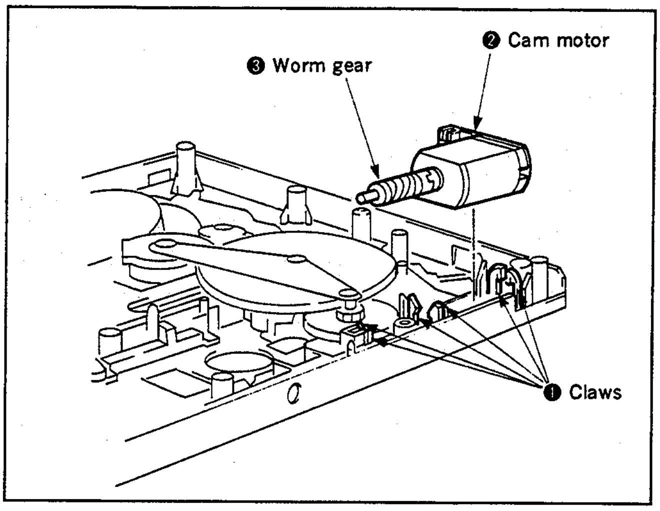

❷ Cam motor
❸ Worm gear
❶ Claws

Fig. 3-35.

3-30. CAM GEAR (Fig. 3-36)

1) Remove the three washers 2 ❶, then pull out the cam gear holder ❷.
2) Pull out the cam gear ❸.

[Precautions on remounting]

○ Match up the right loading gear ass'y, the tension regulator arm, the S take-up arm, the work wheel, the brake arm and the mode slide plate with respective holes ❹ to ❾ on the chassis in that order.

○ Match up the hole ❿ on the mode slide plate with the hole ❿ in cam gear ❸.

○ Apply 1/2 drop of lubricant to the shaft ⓫.

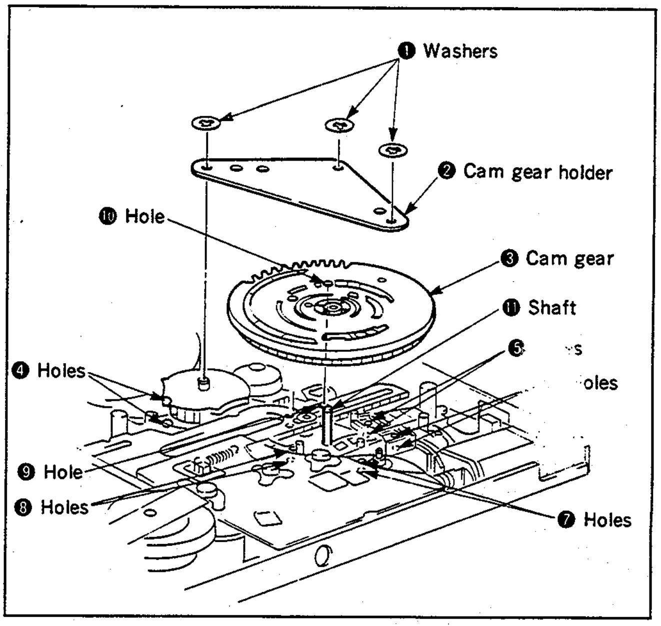

❶ Washers
❷ Cam gear holder
❿ Hole
❸ Cam gear
⓫ Shaft
❺
s
oles
❹ Holes
❾ Hole
❽ Holes
❼ Holes

Fig. 3-36.

3-31. TENSION REGULATOR ARM, S TAKE-UP ARM (Fig. 3-37)

1) Remove the cam gear. (Refer to 3-30)
2) Disengage the claw ❶, then remove the tension regulator arm ❷.
3) Remove the end of the spring ❸ from the S take-up arm ❹.
4) Disengage the claw ❺, then pull out S take-up arm ❹.

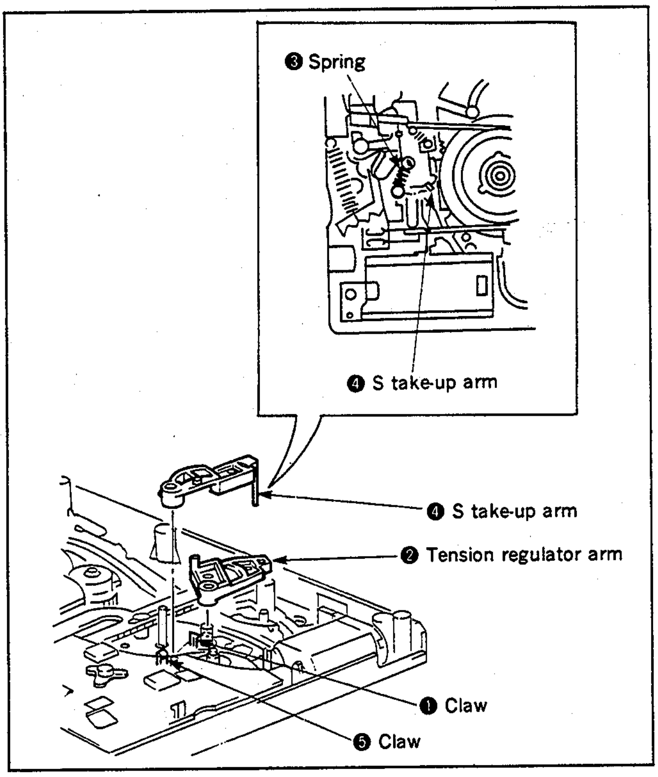

❸ Spring
❹ S take-up arm
❹ S take-up arm
❷ Tension regulator arm
❶ Claw
❺ Claw

Fig. 3-37.

3-32. MODE SLIDE PLATE, RVS RELAY GEAR (Fig. 3-38)

1) Remove the RKB cam gear. (Refer to 3-25.)
2) Remove the cam gear. (Refer to 3-30.)
3) Remove the two washers 2 ❶.
4) Turn the CAP brake ❷ in the direction of the arrow, then pull out mode slide plate ❸.
5) Pull out the RVS relay gear ❹.

[Precautions on remounting]

- ○ Match up the hole ❺ on the RVS relay gear ❹ with hole ❺ in the chassis.
- ○ Match up the holes ❻ on the mode slide plate ❸ with holes ❻ in the chassis.
- ○ Apply 1/2 drop of lubricant to the shaft ❼.

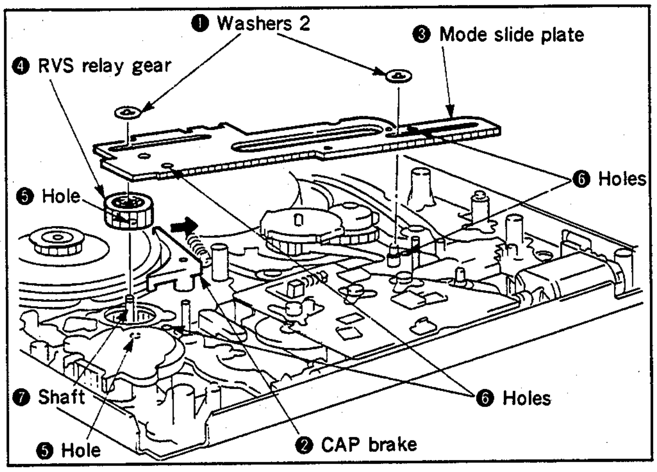

❶ Washers 2
❸ Mode slide plate
❹ RVS relay gear
❻ Holes
❺ Hole
❼ Shaft
❻ Holes
❺ Hole
❷ CAP brake

Fig. 3-38.

3-33. BRAKE ARM, BRAKE SLIDE PLATE (Fig. 3-39)

1) Remove the sub-chassis. (Refer to 3-26.)
2) Remove the cam gear. (Refer to 3-30.)
3) Disengage the claw ❶, then pull out the brake arm ❷.
4) Disengage the two claws ❸, then pull out the brake slide plate ❹.

[Precautions on remounting]

- ○ Insert the shaft ❺ into hole ❻.

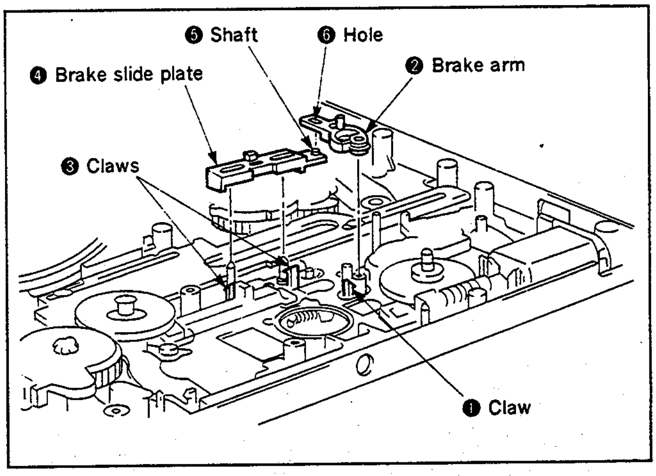

❺ Shaft
❻ Hole
❹ Brake slide plate
❷ Brake arm
❸ Claws
❶ Claw

Fig. 3-39.

3-34. RIGHT SHUTTLE, RIGHT LOADING GEAR ASSY'S (Fig. 3-40)

1) Remove the mode slide plate. (Refer to 3-32.)
2) Remove the plastic slider ❶, then pull out the right shuttle ass'y ❷.
3) Pull out the right loading gear ass'y ❸.

[Precautions on remounting]

○ Match up the ▲ mark on the right loading gear ass'y ❸ with the ▲ mark on the left loading gear ass'y ❹ as shown in Fig. A below.

○ Apply 1/2 drop of lubricant to the shaft ❺.

○ Do not hold on to the arm when pressing on the right loading gear ❸.

○ Clean the section of the right shuttle ass'y ❷ where the tape is attached.

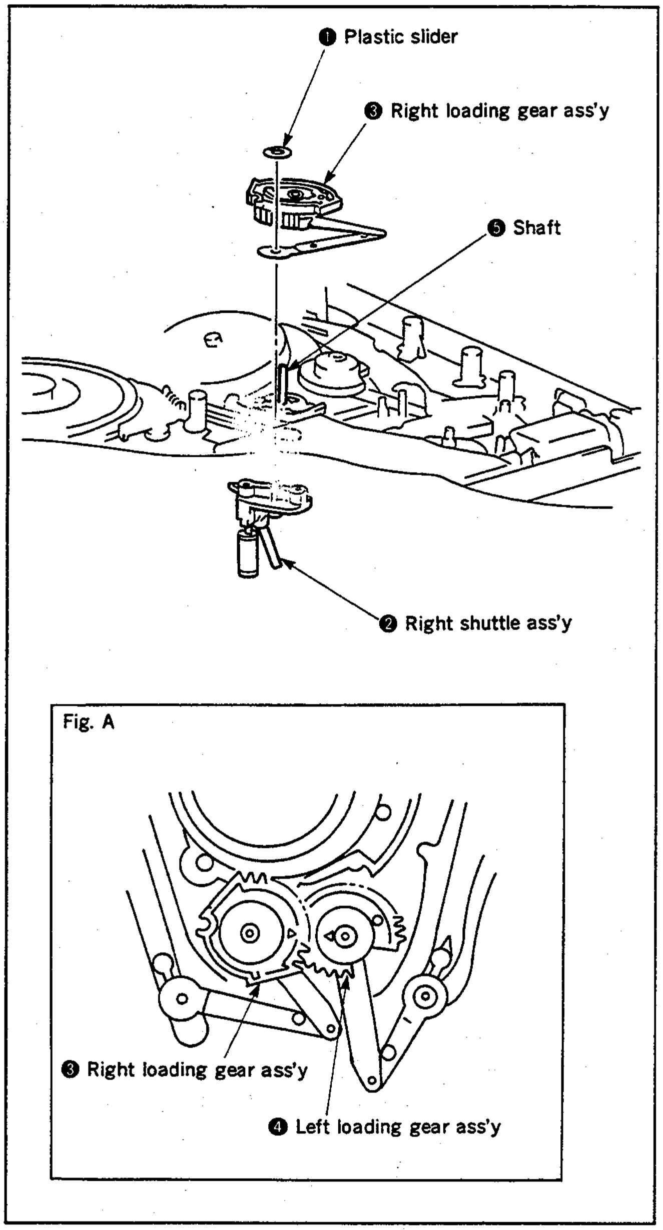

❶ Plastic slider
❸ Right loading gear ass'y
❺ Shaft
❷ Right shuttle ass'y
Fig. A
❸ Right loading gear ass'y
❹ Left loading gear ass'y

Fig. 3-40.

3-35. LEFT SHUTTLE ASS'Y, LEFT LOADING GEAR ASS'Y (Fig. 3-41)

1) Remove the right shuttle ass'y and right loading gear ass'y. (Refer to 3-34.)
2) Remove the plastic slider ❶, then pull out the left shuttle ass'y ❷.
3) Remove washer 2 ❸, then pull out the left loading gear ass'y ❹.

[Precautions on remounting]

○ Apply 1/2 drop of lubricant to shaft ❺.

○ The tension regulator arm ass'y ❻ and left shuttle ass'y ❷ must be positioned as shown in Fig. A below.

○ Do not hold on to the arm of the left loading gear ass'y ❹ when the left loading gear ass'y ❹ is pressed.

○ Clean the section of the felt shuttle ass'y ❷ where the tape is attached.

[Adjustments after replacement]

○ Perform tape path adjustments as described in 4-1.

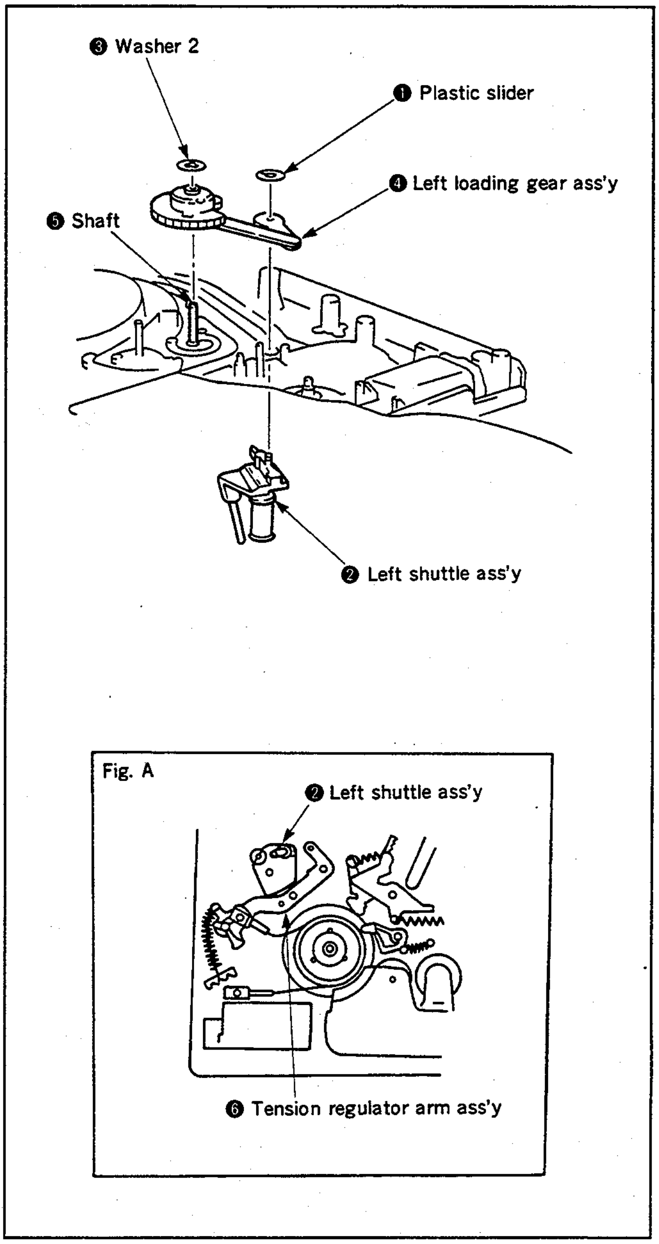

❸ Washer 2
❶ Plastic slider
❹ Left loading gear ass'y
❺ Shaft
❷ Left shuttle ass'y
Fig. A
❷ Left shuttle ass'y
❻ Tension regulator arm ass'y

Fig. 3-41.

3-36. C-ROLLER ARM ASS'Y, C-ROLLER RELEASE LEVER (Fig. 3-42)

1) Disengage the claw ❶, then pull out the C-roller arm ass'y ❷.
2) Unhook the end of the spring ❸ from the chassis.
3) Disengage the two claws ❹, then pull out the C-roller release lever ❺.

[Precautions on remounting]

○ Mount C-roller arm ass'y ❷ so that the hole ❻ on the C-roller arm ass'y ❷ fits into the boss ❼ on the C-roller release lever ❺.

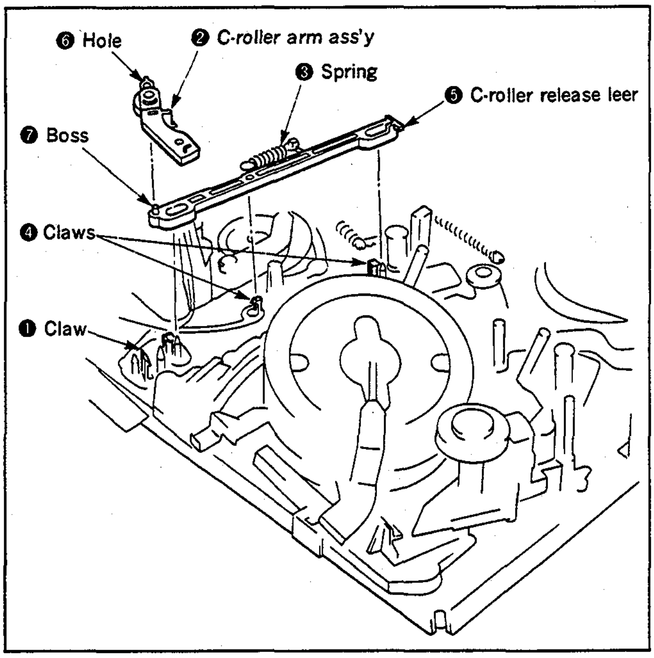

❻ Hole
❷ C-roller arm ass'y
❸ Spring
❺ C-roller release leer
❼ Boss
❹ Claws
❶ Claw

Fig. 3-42.

4. ADJUSTMENT

4-1. TAPE PATH ADJUSTMENT

The "Tape path" refers to the route of the tape from the supply reel disk to the take-up reel disc via the video heads. Each component part of the tape transport system, particularly the surface of parts which make direct contact with the tape must always be kept clean, free of dust, oil, scratches and so forth.

The tape path system is factory preadjusted. when parts of the tape transport system are replaced, be sure to make the required adjustments as precisely as possible in order to ensure stable tape transport.

4-1-1. Tension regulator position/tension adjustment (Fig. 4-1.)

Purpose: Stabilizes contact of the video head and the tape to maintain the tension of the tape so that it feeds at a constant level.

- **Position adjustment**

Mode	Threading is completed without a cassette loaded.' (Refer to section 1-2.)
Adjustment locations	Tension band holder

[Adjustment method]

1) Allow the unit to go through the threading procedure without a cassette loaded.
2) Set the VTR unit to playback, then turn the tension band adjuster lever so that the gap between guide No. 0 and tension arm is within 4.5±0.4mm. *(Set the unit to playback without a cassette loaded.)
3) After adjustment, go through the loading procedure once more without a cassette loaded, then check the position of the tension arm.

- **Tension adjustment**

Mode	Playback
Measuring instrument/tool	Torque cassette
Adjustment locations	Position for hooking the tension spring
Specification	28 to 34 g•cm

[Adjustment method]

1) Playback the torque cassette.
2) Check that the center value deviation reading on the torque cassette meets with the standards.
3) When the reading is higher than the standards: Move the spring toward direction Ⓐ.
   When the reading is less than the standards: Move the spring toward direction Ⓑ.

Note: Move the spring to the tension spring hook position and recheck the tension arm position. If the arm position is misaligned, adjust the position and tension of the tension arm.

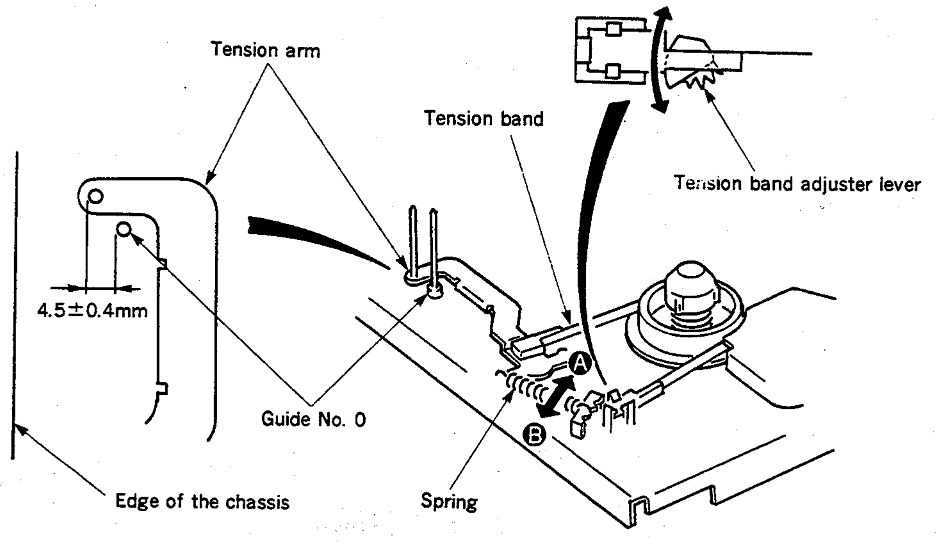


Fig. 4-1.

4-1-2. Height adjustment of the guide roller No. 2 (Fig. 4-2)

Mode	Playback
Tool	Blank tape
Adjustment locations	Guide roller height adjuster screw

[Adjustment method]

1) Load a new tape in the unit, then play it back.
2) Make sure that the lower flange of guide roller No. 2 does not curl up.
3) When the tape curls up : Turn the guide roller adjuster screw clockwise.
   When the tape does not fit into the lower flange : Turn the guide roller adjuster screw counter-clockwise.
4) After the above check, separate the tension arm from the tape, then re-attach it slowly. At this time, check if the tape curls up at the lower flange of the guide roller No. 2 and if the curl disappears within 2 seconds.
5) If curl does not disappear in two seconds : Turn the adjuster screw clockwise.
   If the tape does not curl up : Turn the adjuster screw counter-clockwise.

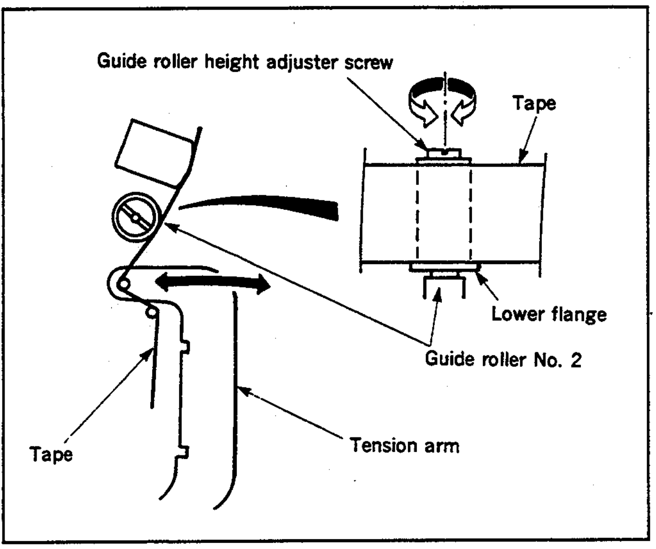


Fig. 4-2.

4-1-3. Height adjustment of guide roller No. 7 and the RVS arm (Fig. 4-3.)

Mode	Playback
Tool	Blank tape
Adjustment locations	Height adjuster nut

[Adjustment method]

1) Load the tape into the VTR and play it back, then adjust the height of the guide roller No. 7 so that the tape runs along the lower flange of guide roller No. 7.
2) If the guide roller is too low : Turn the height adjuster nut counter-clockwise.
   If the guide roller is too high : Turn the height adjuster nut clockwise.
3) Run the tape in REV, then adjust the height of the RVS arm so that the tape runs along guide roller No. 7.
4) If the tape gets caught in the upper flange of guide roller No. 7 : Turn the RVS arm height adjuster nut clockwise.
5) If the tape catches on the lower flange of guide roller No. 7 : Turn the RVS arm height adjuster nut counter-clockwise.

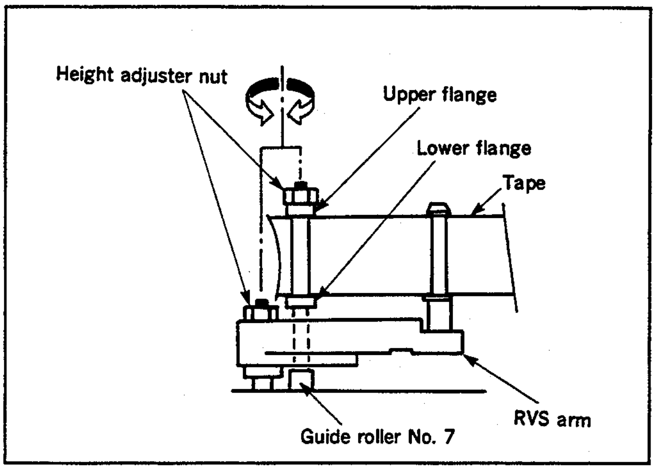


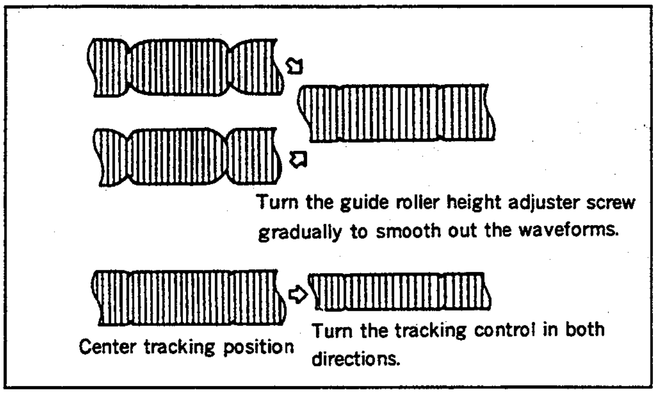
Fig. 4-3.

4-1-4. Height adjustment of guide rollers No. 3 and No. 6 (Fig. 4-4)

Mode	Playback
Signal	Hi-Fi alignment tape (Hi-Fi 400Hz)
Measuring instrument	Oscilloscope
Measuring point	CH-1 : Connector PB RF pin for RF PC board check. CH-2 : Connector RF SW P pin for RF PC board check.
Adjustment locations	Guide roller height adjuster screw.

[Adjustment method]

1) Tracking (playback) : Turn off the auto tracking, then press the tracking buttons ▽ and △ simultaneously to set the tracking at the center position.
   (If adjustment is made after the drum is replaced, the tracking must be set at the max. Rf output position.)
2) Height adjuster screw: Even out the RF output waveforms.
3) Press the tracking buttons (playback), ▽ and △ alternately.
4) Check that RF output drops the same amount at the front and rear edges.


Turn the guide roller height adjuster screw gradually to smooth out the waveforms.

Center tracking position

Turn the tracking control in both directions.

Fig. 4-4.

4-1-5. ACE head ass'y adjustment (rough adjustment) (Figs. 4-5 and 4-6)

Purpose : Allows the tape to make even contact with the head for recording and playback of the specified track.

Mode	Playback
Tool	Blank tape
Adjustment locations	Height adjuster nut, tilt adjuster screw

[Adjustment method]

1) Mount the ACE head ass'y. At this time, adjust the height so that the height of guide flange No. 7 matches the level of the lower edge of the control head.
2) Remove the adjustment tool and load a new tape, then set the unit for playback.
3) Check that the tape does not curl or raise up noticeably near the ACE head.
4) If the yape curls up or rarises noticeably, readjust the tilt adjuster screw, the azimuth adjuster screw and the height adjuster nut.
   (The height of the ACE head should be adjusted so that the lower edge of the tape is approx. 0.1 to 0.15 mm from the control head.)
5) Perform precision adjustment.

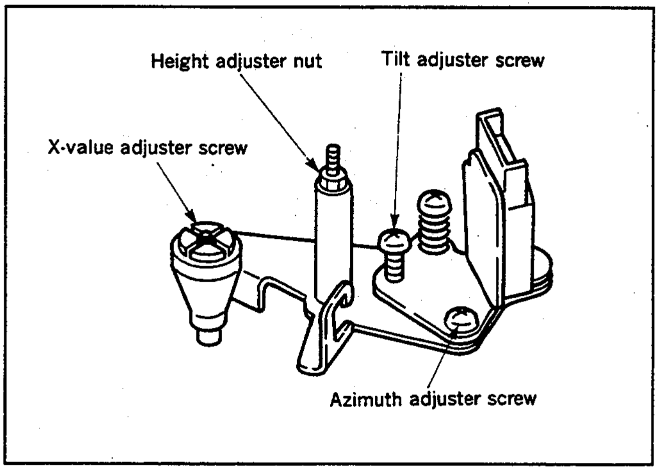


Fig. 4-5.

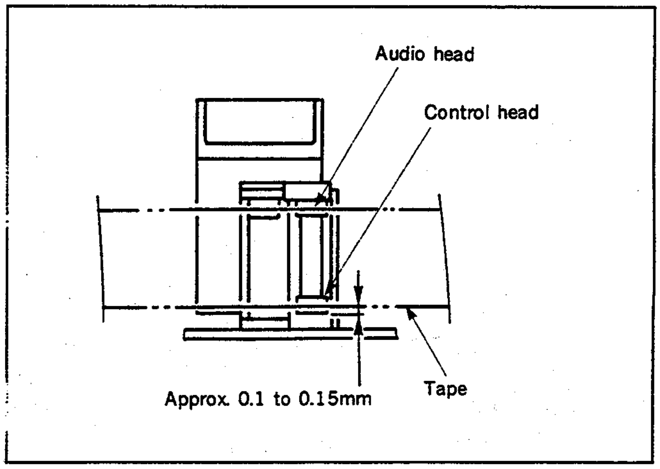


Fig. 4-6.

4-1-6. ACE head assembly adjustment (precision adjustment)

Mode	Playback
Signal	Alignment tape (JVC-MH-1 1KHz)
Measuring instrument	Oscilloscope
Measuring point	Audio output terminal
Adjustment locations	Azimuth adjuster screw Height adjuster nut Tilt adjuster screw

[Adjustment method]

1) Adjust the tilt adjuster screw in the FWD or REV mode so that the lower flange of guide No. 7 does not curl up or raise.
2) Alternately adjust the azimuth adjuster screw, the height adjuster nut, and the tilt adjuster screw to maintain even audio output at maximum with minimum deviation.

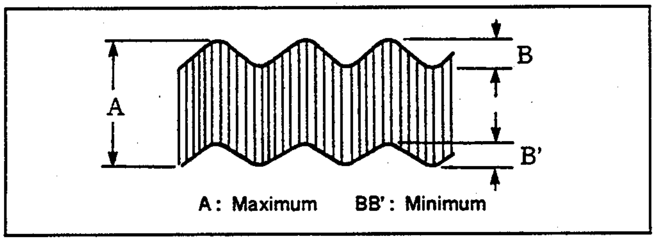

A
B
B'
A: Maximum BB': Minimum

Fig. 4-7.

4-1-7. X-value adjustment

Purpose: To obtain compatibility with other VTR.

Precaution: Be sure to perform the preset tracking adjustment before perform this adjustment. (Refer to the Service Guide.)
Turn off the auto tracking and set the VTR for manual tracking mode.

Mode	Playbadk
Signal	Hi-Fi alignment tape (Hi-Fi 400Hz), alignment tape (JVC-MH-1)
Measuring instrument	Oscilloscope
Measuring point	CH-1: Connector PB RF pin for RF PC board check. CH-2: Connector RF SW P pin for RF PC board check. (Check with the CHA head)
Adjustment locations	X-value adjuster screw

[Adjustment method]

- **Adjustment by Hi-Fi alignment tape**

  When the tracking is set at the center position (by pressing the ▽ and △ keys simultaneously), adjust the RF output to maximum.

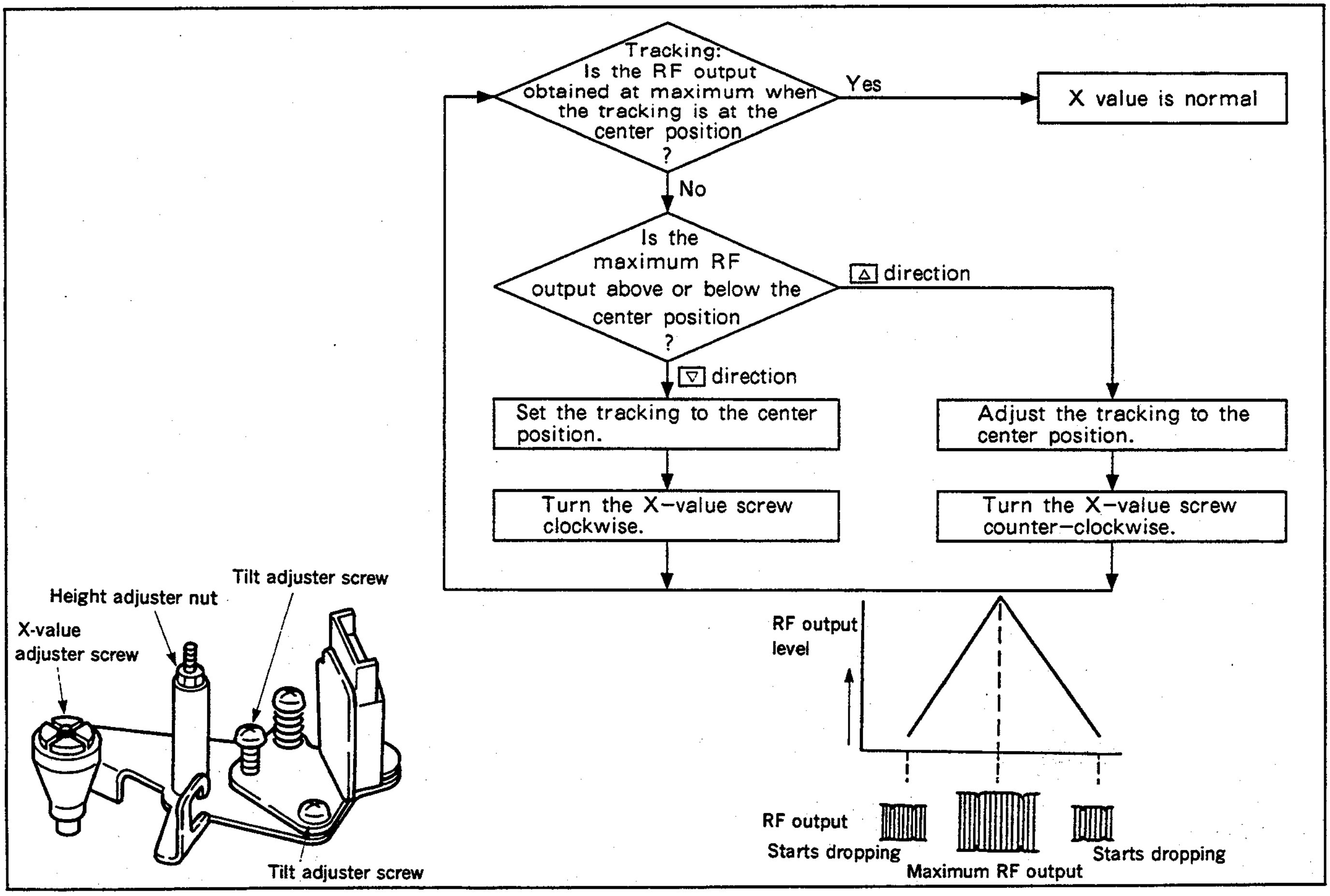

Tracking:
Is the RF output obtained at maximum when the tracking is at the center position ?
Yes
X value is normal
No
Is the maximum RF output above or below the center position ?
△ direction
▽ direction
Set the tracking to the center position.
Turn the X–value screw clockwise.
Adjust the tracking to the center position.
Turn the X–value screw counter–clockwise.
Height adjuster nut
Tilt adjuster screw
X-value adjuster screw
Tilt adjuster screw
RF output level
RF output
Starts dropping
Maximum RF output
Starts dropping

Fig. 4-8.

● Adjustment by Alignment tape (JVC-MH-1)

Adjust the X-value adjuster screw so that maximum RF output is obtained and also that the RF output drops to the same position on pressing the respective ▽ and △ buttons while the tracking is set at the center position.

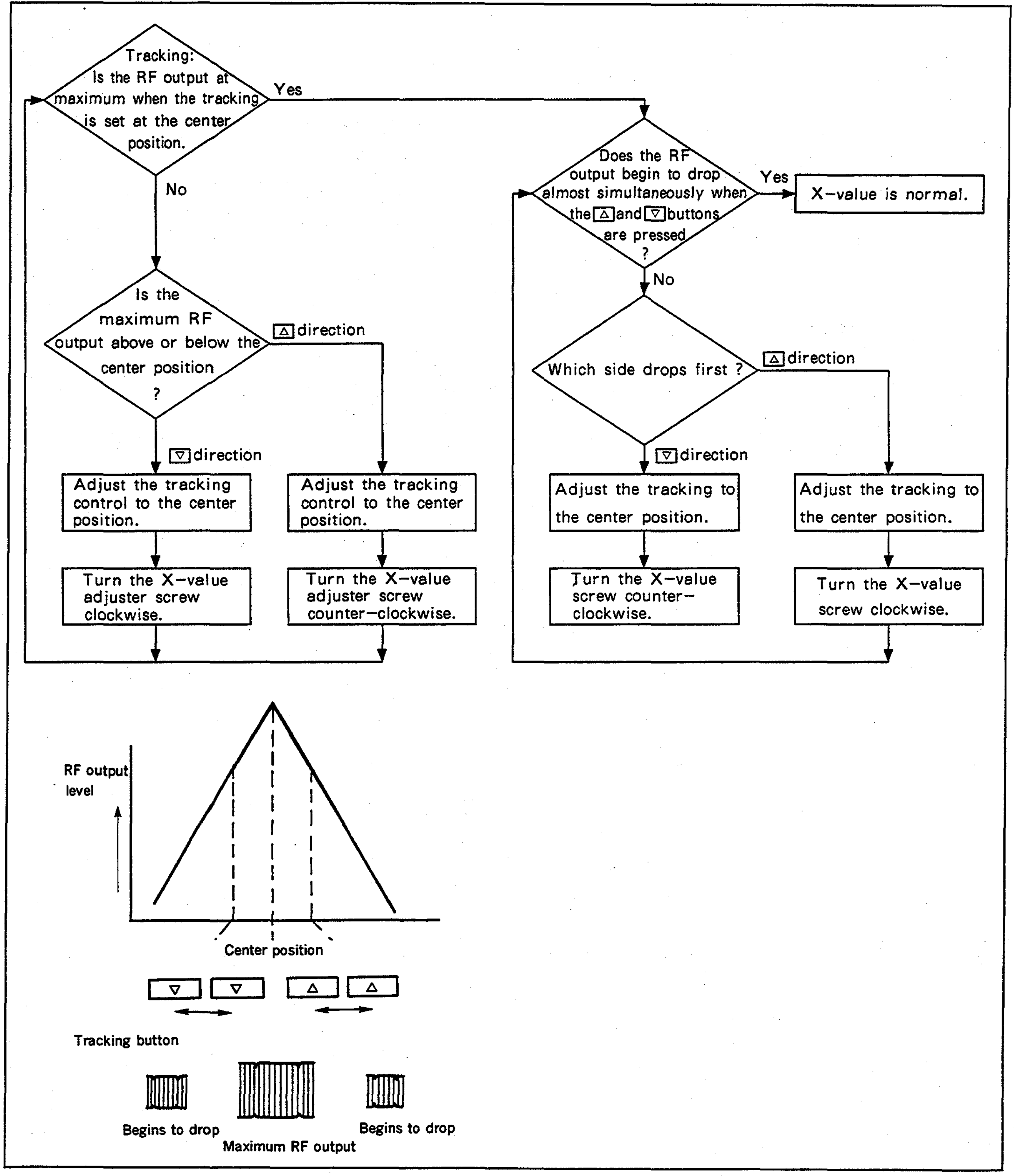

Tracking: Is the RF output at maximum when the tracking is set at the center position.
Yes
No
Is the maximum RF output above or below the center position ?
△ direction
▽ direction
Adjust the tracking control to the center position.
Turn the X-value adjuster screw clockwise.
Adjust the tracking control to the center position.
Turn the X-value adjuster screw counter-clockwise.
Does the RF output begin to drop almost simultaneously when the △ and ▽ buttons are pressed ?
Yes
X-value is normal.
No
Which side drops first ?
△ direction
▽ direction
Adjust the tracking to the center position.
Turn the X-value screw counter-clockwise.
Adjust the tracking to the center position.
Turn the X-value screw clockwise.
RF output level
Center position
▽
▽
△
△
Tracking button
Begins to drop
Maximum RF output
Begins to drop

Fig. 4-9.

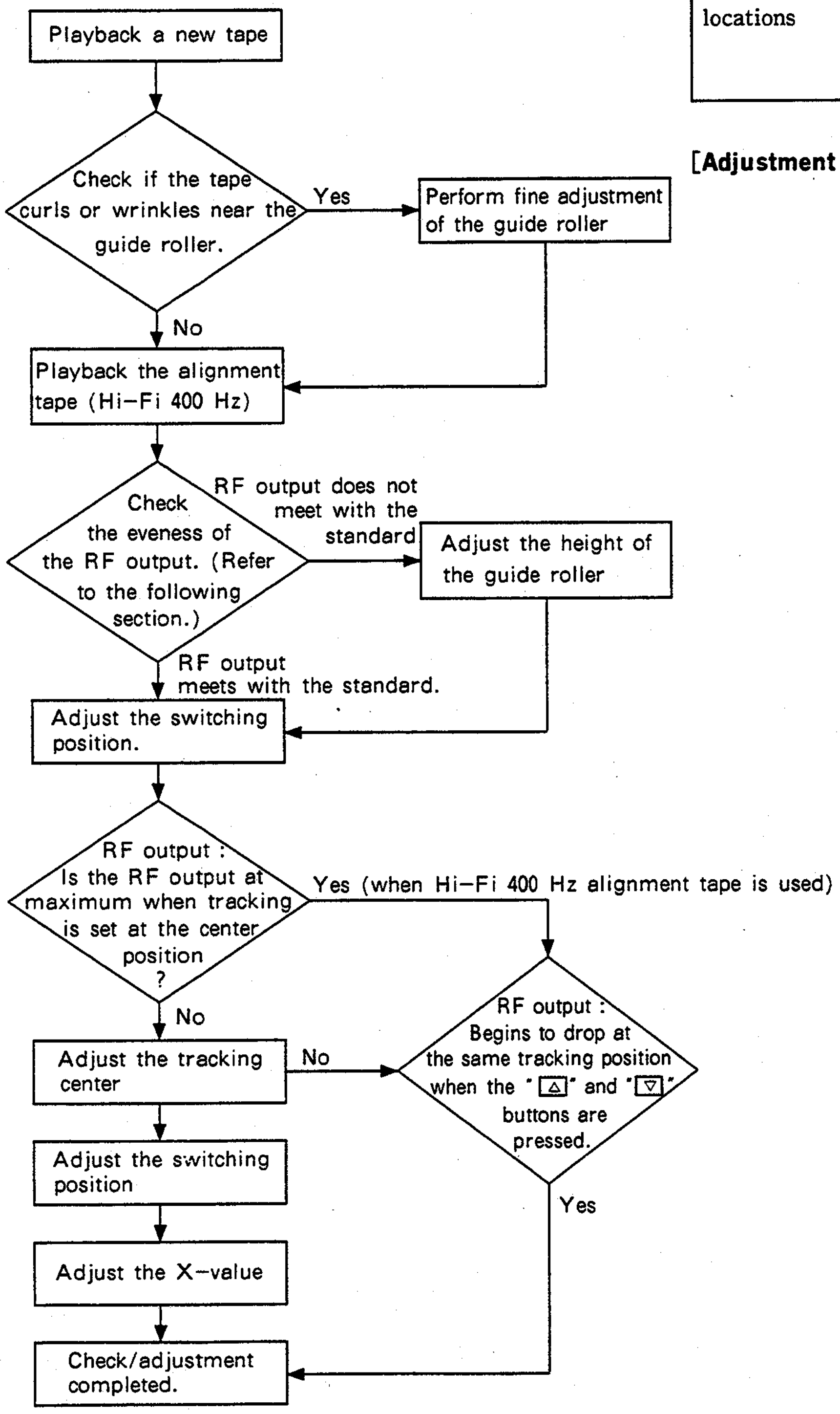
4-1-8. Adjustments after replacing the drum (video head)

Purpose: Co-relative height, X-value and other factors of the drum will deviate from those of the guide roller. If the drum is replaced properly, these deviations are extremely small.

Precaution: Turn off the auto tracking and set the manual tracking mode.

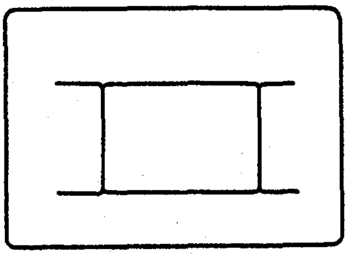
Mode	Playback
Signal	Alignment tape (JVC-MH-1), blank tape
Measuring instrument	Oscilloscope
Measuring point	CH-1: Connector PB RF pin for RF PC board check. CH-2: Connector RF SW P pin for RF PC board check.
Adjustment locations	Guide roller (refer to 4-1-5.) Switching position, Tracking preset, SP delay mono-multi, X-value (refer to 4-1-8) } (Refer to the Service Guide)

[Adjustment method]

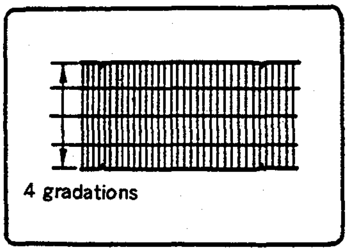

Playback a new tape
Check if the tape curls or wrinkles near the guide roller.
Yes
Perform fine adjustment of the guide roller
No
Playback the alignment tape (Hi-Fi 400 Hz)
Check the eveness of the RF output. (Refer to the following section.)
RF output does not meet with the standard
Adjust the height of the guide roller
RF output meets with the standard.
Adjust the switching position.
RF output : Is the RF output at maximum when tracking is set at the center position ?
Yes (when Hi-Fi 400 Hz alignment tape is used)
No
Adjust the tracking center
No
RF output : Begins to drop at the same tracking position when the "△" and "▽" buttons are pressed.
Yes
Adjust the switching position
Adjust the X-value
Check/adjustment completed.

[Checking the eveness and fluctuation of the RF output]

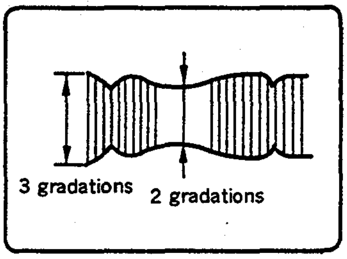
1) Set the RF output to the maximum level using the tracking buttons.



2) Perform fine adjustment of the voltage level range of the oscilloscope, then adjust the RF output deviation to within 4 gradations.



3) Press the tracking buttons and adjust the maximum amplitude of the RF output to within 3 gradations.
4) At this time, check if the minimum amplitude is more than 2 gradations.



5) Check that the RF output fluctuation between minimum and maximum levels is within 13%.

4-1-9. Checking the tension and torque

Purpose: To check that the tension, torque and compression force of the tape take-up section and mobile sections to ensure smooth tape run and achieve standard VTR performance.
If the tape transport is not smooth or problems occur in relation to the tape transport speed, perform the following check.

Mode	Each operation mode without loading a cassette tape. (Refer to section 1-3.)
Measuring instrument	Torque gauge, Torque gauge adapter

Item	VTR operation mode	Reel to be measured	Measurement value
Main brake torque	Stop	Supply and take-up reels	170g•cm or more
Review torque	Review	Supply reel	180±30g•cm (using the torque cassette)
Take-up torque	Playback	Take-up reel	80 to 140g•cm (using torque cassette)
Back tension torque	Rewind	Take-up reel	4 to 25 g•cm

[Check method]

Measure the torque using the torque gauge and torque gauge adaptor with the torque gauge fixed.

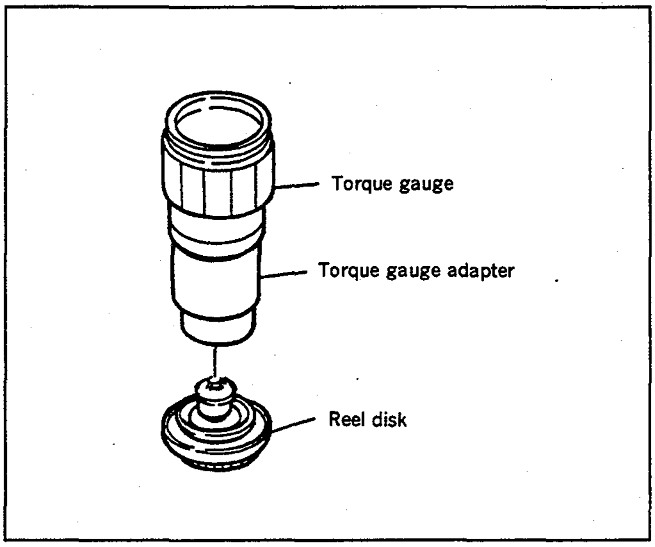


Fig. 4-13.

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